

OCTOBER 1, 1962

Mr. Doorman
H.

NOTES 10-1-62 PRESTON (DEBUS) (TO HOLMES)

1. Atlas Agena. Checkout of Ranger V is on schedule.
2. Real Estate Acquisition. Public Law 87-584, August 14, 1962, authorizes NASA to pay resettlement expenses to those owners and tenants of land acquired on or after November 1, 1961. NASA Headquarters is preparing an administrative regulation covering payment of claims. Approximately 500 owners and tenants are eligible to receive payment.
3. Contractor Personnel. The initial complement of additional contractor personnel required for shop operations started work this week. Total 9 people, of which 7 were electrical or communications types.
4. Telephone Requirements. New telephone installation requirements in the Industrial Areas are beyond available capacity at present, with activation of Central Shops, Special Assembly Building, and the usual preparations for manned shot all on hand at once.
5. Modifications to Service Structure, LC-12. Contract awarded to ConSteel Ets Hokin & Galvin on 21 September 62 in the amount of \$399,321. The CWE is \$499,300. Notice to Proceed will be issued on or about 19 October 62.
6. VAB Criteria. URSAM (Architect-Engineer on VAB) submitted preliminary draft of criteria; and brought model for two day conference.
7. Hazards Test Program. In a joint meeting with MSC/LOC at Ballistics Research Laboratory it was mutually agreed that BRL will not perform the hazards test program. BRL evidently wanted to assume a great deal more technical authority over the direction of the program than Dr. Gayle wished to delegate. Therefore, the scope of the work is being rewritten and possible sources investigated.
8. The proposed GE areas for reliability assessment will be discussed at LOC by Myers, O'Neill and possibly Sloan on Thursday, October 4. The same people will be at MSFC on this subject Monday, October 1st.
9. CTL. Pre-launch preparations of Jupiter CTL 110 are progressing in a satisfactory manner. Turnover to the NATO troops is scheduled for 17 October 1962.

10. Federal Court Restraining Order Against Work Stoppage on LC 37. Growing out of an unfair labor practice charge by Blount Brothers Construction before the NLRB, a temporary restraining order was obtained on Monday September 24, from the U. S. District Court at Tampa directed against the refusal of members of the international union of Operating Engineers to perform certain unloading and hoisting work on heavy equipment unless certain other work being performed by members of the IBEW was assigned to them. The petition of the NLRB for a temporary restraining order was supported by the affidavit of G. Merritt Preston, Acting Director, LOC. As of September 27 this action appears to have been effective in eliminating the work stoppage on LC 37. On that date all employees who had walked off the job were back to work.

11. Audit of C of F Program, LOC. The NASA Audit Division has notified LOC that two auditors, Messrs. Prestipino and Henry will arrive October 1 to begin audit. Col. Bidgood has been advised by the Acting Chief, Resident Auditor, of this approach.

12. Review of Hertz Contract Usage. This situation is under examination by NASA Audit Division with the declared purpose of effecting better control of costs by restrictions on usage of Hertz rental vehicles. Substantial improvement in system had already been effected prior to initiation of review.

13. SA-3. Launch preparations are proceeding on schedule. Time lost when booster erection was delayed by weather has been picked up.

14. FY-64 Budget Estimate Review. Personnel of LOC participated in the FY-64 budget estimate review with Diaz, D'Onofrio and Holcomb from Headquarters. Numerous suggestions were received as to how the budget document could be prepared and are being acted upon at this time.

15. Nova Launch Facilities Study. September 18-19, 1962, the Management Team for Nova Launch Facilities Study evaluated the proposals from 15 companies and unanimously selected Martin-Marietta Corporation, Aerospace Division, Denver, Colorado, to perform this study. Public announcement of this selection will not be made until negotiations with Procurement and Contracts Office are completed on September 25, 1962; contract will become effective on or about October 1, 1962. An orientation meeting for the contractor's study group will be held in Huntsville on October 2, 1962 with the Management Team, to provide the contractor with additional guidelines and background material for the study effort.

16. LH₂ Loading Control System. Completed the technical evaluation of proposals on Test Program for Evaluation of three Prototype Vehicle LH₂ Loading Control Systems; seven companies submitted proposals. On September 18, 1962, this Office sent a request to Procurement and Contracts Office that a contract be negotiated with Boeing Company, Seattle, Washington, for conducting this test program. Resolution of a number of technical details will be required prior to or during contract negotiations.

17. Modification of LC 34. Procurement and Contracts Office completed the evaluation of proposals for modifying LC 34 RP-1, LOX, and LN₂ Servicing Systems to accommodate Saturn C-1, Block II vehicles. A contract award will be forthcoming soon.

18. Strain Measurements. Installation of the 300 strain gauges required for the launcher qualification test at Complex 37 has begun. Delivery of the "MicroSadic" data acquisition system* is expected the week of October 1.

*To be used at Complex 37 for the launch qualification test.

19. Ranger RA-5. The previously mentioned difficulty resulting from the Range's statement that an insufficient number of different trajectory data had been submitted has been resolved by a compromise: The Range will expend whatever additional effort on their part is required due to the streamlined trajectory approach for Ranger 5, while the NASA has agreed to cover the entire trajectory spectrum more closely for Ranger RA-6.

Another approach going back to an earlier JPL proposal is being considered for the future. According to this proposal the Range would calculate their own trajectory from injection into parking orbit on, based upon data provided to them. The Range has analyzed the JPL-generated proposal and is willing to follow it provided they will be reimbursed for additional efforts expended. Negotiations with M-L&M, who will be responsible for such funding, are on the way.

20. Saturn SA-3. The previously mentioned control problem which resulted from the changed mass-time history as a consequence of filling up the booster tanks, has now been resolved in cooperation with MSEC.



NOTES 10-1-62 GORMAN

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Nothing to report this week.

* 1. MICHLOUD DOCKING FACILITY

gem

The NASA Headquarters and The Department of the Army both signed an agreement for the joint use of the Army-Michoud Storage Area located adjacent to the western boundry of MSFC/Michoud Operations, New Orleans, Louisiana. The Michoud Operations Docking Facility is presently being designed and will be built in the Army-Michoud Storage Area. ✓

2. BOEING OFFICE BUILDING

Boeing is negotiating a lease with Leo A. Daly Company for an office building of approximately 270,000 net square feet to be constructed across the street from the MSFC/Michoud Operations administrative building in New Orleans. The lease and a modification to the Boeing Contract is scheduled for completion by October 12, 1962. ✓

3. CHRYSLER OFFICE BUILDING

Proposed lease between Chrysler and New Orleans East Company for an office building of approximately 207,000 net square feet to be constructed across the street from the MSFC/Michoud Operations administrative building is being reviewed by Chrysler. Execution by October 5, 1962, is anticipated. ✓

4. DISPOSAL OF FOUNDRY EQUIPMENT

General Services Administration disallowed all bids submitted for the removal of the foundry equipment and restoration of the foundry building for various technical contract reasons. All bidders are to resubmit their bids by October 4, 1962. Schedule for completion of the work (Jan. 15, 1963) remains unchanged. ✓

NOTES 10/1/62 DEBUS

B₁₀-1

No NOTES received this date.

B10-1

1. C-1 DYNAMIC TESTS EQUIPMENT: In reply to your question concerning this subject in Notes - Geissler - 9-24-62 (copy attached): The water bearing support system is being used in the C-1 Block II dynamic tests primarily to gain experience applicable to C-5 testing. In addition, we hope to make a double check of the affect of the suspension system on the C-1 Block II suspended vehicle tests, and in this way obtain improved data for C-1 Block II. Present time scale doesn't permit using water bearing support system at start of SA-5D tests, therefore initial tests will use an improved rope suspension. However, we hope to check out water bearing system in later phase of SA-5D testing. Vehicle support is designed to permit a quick switch from one system to the other. ✓

The principle of checking two supports in a head to head arrangement prior to building and installing complete system on test stand, is also planned for the C-5 support system. ✓

96m

NOTES 10-1-62 GORMAN

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Nothing to report this week.

B-1

1. PUBLICITY OF NASA QUALITY REQUIREMENTS: After joining Lockheed, Sunnyvale, California, Dr. Landis Gephart (former Director of the Office of Reliability and Quality Assurance in NASA Hq.) invited Mr. Howard Weiss of the Office of Reliability and Quality Assurance and myself, in July, to Lockheed that we may present the NASA Quality Requirements to a selected group of Reliability and Quality Assurance personnel of the different Divisions. Mr. Weiss briefed the group in detail on the most essential requirements as laid down in the NASA Quality Publications NPC 200-1,2,3, while I furnished the historical background based on the in-house experience of MSFC, explained the need for much more stringent requirements for the fulfillment of future missions, solicited the cooperation of the Company and offered the help of the Quality Assurance Division in all areas we are working in. The excellent response we found and the lively discussion we had, particularly with personnel of the Agena and Rift projects, encouraged Mr. Weiss and myself to arrange for a similar session at General Dynamics/Astronautics with representatives of the other Divisions of General Dynamics and the Corporate Vice-President for Reliability Assurance, Mr. J.Y. McClure. This session, held on September 18-19 in San Diego, was slanted toward Centaur and Atlas, was equally well received, and should provide for a better understanding of the problem, by the company, and for an improved willingness to act accordingly. ✓✓✓

2. QUALITY PROGRAM PLAN FOR THE M-1 ENGINE: A review of the Aerojet General Corporation Quality Program Plan for the M-1 Engine was conducted. Aerojet Engine Management office of P&VE Division, Quality Assurance Division, Lewis Research Center Quality Assurance and Reliability, and NERVA Quality Assurance and Reliability personnel participated. The Lewis Research Center and the NERVA personnel sat in because the NERVA contract is being negotiated with Aerojet. The Quality Plan was much more complete than the one previously presented by Aerojet, however, several sections still require modification. ✓

* 3. EAST COAST SCHOOL FOR RELIABLE ELECTRICAL CONNECTIONS: Arrangements have been successfully completed for the opening of a NASA soldering school in the Boston, Mass. area. Target date for the first week of training is October 22nd. ✓

4. RELIABILITY POLICY DIRECTIVE OVERALL PARTS PROBLEM: A meeting was held between members of P&VE Division and Quality Assurance Division to discuss the overall parts problem as related to the Reliability Policy Directive published by the Reliability Policy Board. The problem was that both parties had misunderstood the intent of the program with respect to each other. The situation is much improved and should result in a better parts working group. Problems still remain with respect to Propulsion and Vehicle Engineering Division and the Astrionics Division in the field of documentation, however, this is being worked on. ✓

NOTES - HAEUSSERMANN, 10/1/62

Ba-1

No submission for this week.

* 1. 5-1-4 ACCEPTANCE FIRING:

gm

A static firing test was successfully performed with flight cutoff sequence; Inboard engines cut off by LOX level sensor at 121.5 seconds and outboard engines approximately 6 seconds later. 5-1-4 will be removed from the test stand and SAT-4.5 will be installed today, 10/1/62. ✓

2. BATTLESHIP 5-IV TESTING DAC:

* gm

Static firing Saturday, 9/29/62, was cut by observer at 40 seconds of an intended 420-second test. Cutoff was caused indirectly by sub-performance of the helium heater. (Valves functioned OK, but mixture ratio off, producing low temperature gas; can be easily corrected by proper orificing of propellant lines.) Insufficient helium flow to the LOX tank caused pump inlet pressures to approach the redline values. The helium heater should have been cut off and LOX tank auxiliary pressure turned on and the firing could have continued; however, cutoff was given inadvertently. The run was rescheduled for 10/1/62. ✓ *They ran that done prior to the run! B*

3. CENTAUR:

Static firing, Friday, 9/28/62, on second flight stage (F-2) was cut by observer at the start of an intended 10-second run. Cutoff was given because the hydrogen boost pump r.p.m. did not indicate and was cut by automatic timer. Both sides of the tachometer output were inadvertently grounded due to the addition of oscillograph recording. The wiring was corrected and a successful 10-second run was performed, 8:00 p.m., Friday night. A 60-second duration test is planned 10/12/62. ✓

* 4. MTF:

gm

Basic design criteria for initial support buildings, including warehouse, to be forwarded to Mobile District C of E today. Preliminary submittals of criteria for other support buildings and S-1C test stands currently being reviewed. Criteria for S-11 stands progressing satisfactorily. ✓

* 5. MARINE ACTIVITIES:

gm

A review of NASA's consultants research effort regarding vessel availability for large-stage transportation was made last week at their New York office. Conclusion thus far: unless the ferry NEW GRAND HAVEN is acquired by NASA, we will be required to purchase or charter jumbo tankers or ore carriers. These are vessels with a depth of hull in excess of 40' and they will require special berths to side load and unload flight vehicles. Cost estimates to dredge berths and raise piers at Port Huneme and Seal Beach for the deeper hulls is being studied by Facilities Engineering Office. These high berths will be in addition to those we required for barge and AKO operations. Meetings with Industry on 9/29/62 revealed that there was considerable interest in our operation. One unsolicited offer of a jumbo tanker charter was submitted and the charter costs confirm our opinion that government- and contractor-operated equipment is most economical and in the government's best interest. Barge PROMISE is berthed at Cape Canaveral, secured by hurricane moorings. ✓

NOTES 10-1-62 HOELZER

B10-1

No report.

a) RCA-110 ??

b) Items suggested last week ??
qmg-1

B10-1

1. CENTAUR:

a. Centaur Evaluation: Direction was received from NASA Hq that the Centaur Project Management will be moved from MSFC to Lewis Research Center at Cleveland. A meeting was held between the Project Office and the MSFC divisions on Fri., 9-28, to discuss the method of releasing the project to Lewis. Details of a schedule for transferring the project are to be discussed at a meeting between NASA Hq, Lewis, and MSFC personnel at Cleveland today. ✓

b. F-2 Status: Test Run 1-1 was rescheduled from 9-26 to 9-28 due to a shortage of the hydrogen vent valve. It was decided to conduct the test with one flight hydrogen vent valve and one captive valve. A successful test run 1-1 was conducted on 9-28. Test results are presently being evaluated jointly by GD/A and MSFC personnel. Test Run 1-2 is presently scheduled for 10-12. ✓

2. AGENA:

a. S-27 Topside Sounder (Alouette): Liftoff occurred at 0005 CST 9-29-62 from PMR. The countdown proceeded without significant problems. The final phase of the count was interrupted at T-12 seconds due to no telemetry on the Thor. A decision was made immediately to launch without this coverage, the count recycled to T-3 minutes and resumed. Liftoff was good. The orbit apogee is reported by GSFC to be 640 statute miles (nominal 621), perigee is 617 statute miles (nominal 618). The period of orbit is 105.4 minutes and the inclination angle is 80.48° (nominal 80°). Telemetry from the spacecraft is reported good. The Thor-Agena trajectory was slightly elevated. Second burn of the Agena was never confirmed by direct tracking or telemetry but is obvious from orbit data. ✓✓

b. Ranger 5: J-FACT (Joint Flight Acceptance Composite Test), a major milestone in pre-launch test, was successfully completed on Wed., 9-26. Over-all, the test was unusually good. Dual tanking test was completed on Thurs. A re-run of the Atlas FACT was conducted Fri. Following J-FACT, both the Ranger 5 spacecraft and Agena Vehicle 6005 were demated and returned to the Missile Assembly Building (MAB) for further component validation and installation of pyrotechnics. The pre-launch checkout schedule is being maintained and no delay in launch is expected. ✓

c. Mariner R-2: (This information is not for public release) - Mariner R-2 status as of 2400 GMT, 9-27-62: The Magnetometer was in an unscheduled calibrate mode from 0716 to 1416 GMT, 9-27. The Magnetometer calibration at 0620 GMT, 9-27, occurred normally. CC&S cyclic pulse number 44 occurred on schedule at 1246 GMT, 9-27. The attitude control gas supply at present is 3.56 lb, and the usage is 0.022 lb. per day. The antenna hinge and reference angles are 48 and 51 degrees respectively. As of 2400 GMT, 9-27, the spacecraft was 5.075 million statute miles from the Earth. The Earth referenced velocity at that time was 6562 statute miles per hour. ✓

Shakes that is B

Has the signal?
Is Magnetometer
now back to
normal? 29m

1. LUNAR LOGISTIC SYSTEM

We are proceeding on the basis that we will have the first rough draft of the C-5 Lunar Logistic Vehicle in about two weeks for circulation within MSFC. By mid November we should have a fairly clean draft and by mid December our PDP should be ready for submission to Mr. Holmes. By January 1962, I hope we can transfer this project to another Project Office. It appears to me that Dr. Hueter's office might be a good choice as the problems we will encounter are of the CENTAUR type, same engines, same technology, but somewhat more severe environment. They also would probably have to handle several payloads from the project management viewpoint. I would favor an early decision on how the lunar logistic system be handled after program approval, as we have to describe this in the preliminary development plan - the first draft of which is due in two weeks. Could I have your comment on this?

2. PAYLOAD MANAGEMENT

Our lunar logistics system PDP must describe who we propose to handle the payloads. Here is a matrix of possibilities for three typical payloads and I would appreciate you checking those items which you feel we should consider doing in-house:

Shelter for Crew Survival and Support	Cargo Container for Supplies	Multipurpose Lunar Surface Utility Vehicle
Project Management	Same	Same
Contract Management	"	"
Conceptual Design	"	"
Design Criteria	"	"
Detail Design	"	"
Manufacturing and Mockup	"	"
Manufacturing of Test Items	"	"
Manufacturing of Prototype Flight Items	"	"
Payload Test and Checkout	"	"

NOTES 10-1-62 KUERS

Bu-1

- * 1. S-I Status: Clustering operations for SA-6 have been started in the assembly shop with a delay of less than one week. We are now at the peak of our in-house S-I assembly work; all three assembly stations are occupied; vehicles SA-5, SA-D5, and SA-6, the first two of which are scheduled to be completed early in November. The assembly station for SA-5 will then be dismantled to make room for the S-IC thrust structure fixture. ✓
2. Facilities: Contract award authority for the Hydrostatic Test Tower is expected today. ✓
3. S-IC: As you recall we selected a second approach for fabrication of the Y-Ring as an in-house project, using the Electron Beam welding process. (Reference my Notes 5-28-62) The development of the equipment, the vacuum chamber, the pumping system, and the low voltage E.B. gun, is carried out under contract by Sciaky Brothers, Chicago, Illinois. This has yielded valuable results. In the Application of this process for welding heavier cross sections of various aluminum alloys, pertinent facts previously unknown were revealed. With a special 30 KW E. B. gun we are now confident that we will be able to weld the Y-Ring segments by this method, resulting in welds of higher weld efficiency and higher reliability than can be obtained by conventional multipass welding. Delivery of the equipment is expected by the end of January 1963. ✓

WK

→ Do you consider E.B. gun welding for other tank welds also, or just for the Y-Ring? How would this affect tooling presently in the works at Boeing?

B

B₁₀₋₁

NOTES 10-1-62 MAUS

1. LARGE ROCKET ALTITUDE TEST REQUIREMENTS - On my 9-24-62 NOTES (copy attached) you inquired who indorsed the MSFC tentative requirements for larger facilities at Arnold Engineering Development Center at Tullahoma. The MSFC tentative requirements were stated in letter which you signed April 18, 1961, to Commander, AEDC. That letter had concurrence of Dr. Lange, Mr. Hueter, Dr. Geissler, and Mr. Mrazek, and forecast testing of 800,000 lb thrust for Saturn SII stage, at simulated altitude of 150,000 feet. Your April 18, 1961 letter to General Ostrander also stated these requirements "for planning purposes only." Apparently, AEDC decided the facility capability should be upped to 1,500,000 lbs; not just 800,000 lbs. ✓
2. OPERATION OF INSTALLATIONS BUDGET - This is headquarters' new name for the Institutional Budget. We will arrange to discuss the FY 64 OI Budget Estimates with you early this week, prior to forwarding to Office of Programs. ✓
- * 3. PERT, CHRYSLER, C-1 - A computer printout has been obtained for Chrysler network which included all activities through delivery of first C-1 flight item (SA-8) to MSFC. This initial run contained some negative slack on the critical path and is in the area of special tooling and checkout equipment procurement for the vehicle checkout station. Further analysis and review to reduce slack will be made by contractor and project office as input for future debugging runs which are to be made prior to the start of operational reporting by Chrysler. ✓
4. LONG RANGE PLAN - OMSF is essentially using the MSFC Long Range Plan in their planetary area. M-CP and M-FPO have been working with Dr. Shea's office in modifying the planetary program plan to be compatible with the latest OART nuclear propulsion system development schedules. OMSF's Long Range Plan submission will be made to Mr. Hyatt's office the first part of October. ✓
5. SECOND QUARTER FY 63 PROGRAM REVIEW - Mr. Rosen has scheduled the MSFC Second Quarter Program Review for October 9. In addition to the financial data, certain technical backup material has been requested by OMSF in support of the funding requirements. Guidelines and instructions for preparing this new detail Technical Operating Plan were received September 26. We will arrange an internal briefing for you prior to the Quarterly Program Review Meeting. ✓

B 66-1

1. RIFT: Preliminary information from Mr. Finger's office indicates that \$4 million R&D funds are being cut from the FY-63 RIFT budget of \$15 million. This need not result in a flight date slippage if the first tank to be fabricated (for NERVA testing) is deleted. ✓

* 2. S-I STAGE DOCUMENTATION TRANSFER: The general procedure for transferring S-I Stage engineering and documentation responsibility to the Chrysler Corporation has been established. ✓
gm

3. MOVE INTO NEW BUILDING: On 9-29/30-62 the following offices moved into the new addition to Building 4610:

Fifth Floor: Office of the Director, Program Coordination Office, and the Administrative Office.

Fourth Floor: Vehicle Systems Integration Office.

Third Floor: A portion of the Advanced Flight Systems Branch.

Telephone installations will delay occupancy of the first and second floors for approximately two weeks. ✓

4. BOEING: As of 9-28-62, two task assignments with Boeing personnel were released to the Boeing Company; namely, thrust structure assembly design and stress analysis, according to the established schedule. ✓

* 5. METEOROID PROBLEMS: Information was received from Manned Spacecraft Center this week that the responsibility for the meteoroid problem has been assigned to their Space Physics Division. Discussions between Propulsion and Vehicle Engineering Division and Manned Spacecraft Center's Space Physics Division personnel are planned in Houston in the near future. ✓
gm

Proposals by General Dynamics/Astronautics to carry out examinations of MERCURY capsules are being deferred by NASA Headquarters pending review of Manned Spacecraft Center proposals for this same study. ✓

6. S-IV: On 9-29-62 an S-IV Battleship test was run. Scheduled for 420 seconds, it was cut off at 44 seconds due to helium heater pressure loss. ✓

B10-1

NOTES 10-1-62 Rudolph

1. Space Electronics & Telemetry Symposium: I will be in Miami from 29 Sept thru 9 Oct 1962. Banquet Speaker - Dr. Stuhlinger. ✓

2. Coordination Panels:

- (a) Observation & Recommendation Reports written by my office. Content and distribution discussed by my Mr. Marsh with Mr. Neubert: Coordinate with Dr. Kuettner who will make MSFC distribution as appropriate. ✓

- P.R.*
Please
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help -
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B
- (b) Meeting requested by you based on your discussion with Shea, took place 28 Sept, PM, (Rudolph/Burns and Kuettner, Mrazek, Geissler, Weber/Brandner). Highlight: Agreed to propose change in "high level" participation (above panels) of present coordination relations: Replace Review Board by "sort of Super Panel" (under Shea).

Burns will discuss proposal with Gautraud, Tues., 2 Oct., in Washington. Will take further action after that and/or apprise you of status. ✓

3. Steinhoff Proposal - Hope Shea could help. ✓

4. Questioning by PSAC:

- (a) On request of Shea, got call from Eldon Hall re upgrading of C-5, followed by Rough Draft of letter from Shea to you, requesting answer by 15 Oct. Discussed with Rees/Neubert on 27 Sept. (Rees to apprise you); contacted briefly Geissler, deFries, Mrazek, Bramlet, Dannenberg. My Dr. Werner will continue contacts. ✓

- (b) Related to above (?):

Received request from Shea's Office on 28 Sept. to furnish: How many man years spent by MSFC in mode selection. (for Mr. Webb)

We got answer from Neubert and forwarded as follows on 28 Sept.:

Comparison Study of NOVA, C-5 direct, EOR, LOR * 53 manyears

EOR Study = 100 manyears ✓

5. Present Status of Shea's Office: (See enclosure).

Bm-1

* [1. RESEARCH PROGRAMS: We have been informed by various persons in OART that the planned FY-1963 MSFC Advanced Research and Technology Program has been drastically reduced. It seems that this cut in the MSFC program has been ordered by authority higher than OART. The table below will give some indication of the extent of the cuts that we must expect. We do not as yet have the complete information on all task areas.

Program	OART Guidelines of June, 1962	Present Plan
	(in thousand \$)	
Space Vehicle Systems	6313	1880
Space Power	500	395
Electronic Systems	4890	2521
Chemical Propulsion	4262	1650
Nuclear Propulsion Technology	1200	1000
Advanced Vehicle Systems	2650	?
Research	1690	840
Biotechnology	350	?

* [The new figures, in total, are about 60% lower than the ones that were given to us in June.

* [In OMSF, the situation is different. While the indicated cut is modest (10.6 to 9.2 M), the present task approval procedure is practically unworkable. Our tasks must go to OMSF, then to Dr. Seaman personally, then to OART, then back to Dr. Seaman, to OMSF, and to us. Since March 15, we received approval of not more than four tasks. The fate of about 50 or so more tasks which are of great importance to MSFC is unknown at present.

* [This dismal situation of OART and OMSF research programs not only affects our MSFC development projects very severely, but it also represents a great disappointment to Research Projects Division, and to all other Divisions in MSFC, that have put a great deal of energy, effort and manpower into establishing a sound program for OART. Cooperation between RPD and other MSFC Divisions has been excellent. Almost daily RPD has received calls from various persons in OART and in OMSF for information. We have responded eagerly to these requests, and all MSFC budget and program submissions to OART and to OMSF have been made on time. We have been praised by OART and OMSF for the quality and detail of our submissions. This recent turn of events is very shocking; we had expected to obtain satisfactory support from Program Offices in FY-1963.

Research Projects Division, together with Mr. Hardeman and with CPO, would like to work out a plan for better research program procedures which hopefully will eliminate the present severe and deep-rooted difficulties. As soon as we have arrived at a proposal, we would like to discuss it with you, Dr. Reas, and Mr. Gorman. - Do you approve of this? ACTION REQUIRED.

Bonus

I'd like to take this page along to Langley

Bm-1

B10-1

1. J-2 PROGRAM: Engine number 003A was successfully run for a programmed 50 second duration on 9-21-62. Side loads remained for a full five seconds into mainstage. The thrust chamber and injector were not damaged.

This same engine was run for 93 seconds of a programmed 100 seconds on 9-25-62. The run was cut at 93 seconds due to gas generator over-temperature wires burning through.

Rocketdyne is planning a full duration run of 250 seconds for 10-7/8-62 on engine number 004.

On 9-27-62 Rocketdyne corrected the stated Isp of 420 seconds for the last two tests. They detected an evaluation mistake. Isp is back to 427/428 as predicted. Swirlers (future) are expected to increase this by 5 to 6 seconds. ✓

* 2. RL10 PROGRAM: Funds in the amount of \$1.0 million for continuation of the throttling program at Pratt and Whitney Aircraft have not been received. A revised scope of work has been agreed upon by NASA and Pratt and Whitney Aircraft, but testing cannot be initiated until funds have been received. ✓

* 3. F-1 PROGRAM: On 9-22-62, F-1 engine 009 was damaged during the first mainstage run at Edwards Air Force Base. Scheduled for seven seconds at approximately 1400K, at 1.1 seconds an observer "cut" the test. The damage apparently was caused by a pressure tap coming out allowing the hot gas from the chamber to burn a hole in the injector and the dome.

Engine 003 was damaged by a rough combustion condition which occurred milliseconds before the programmed cutoff after a 40 second mainstage run. Baffle and injector damage was sustained. ✓

* 4. H-1 ENGINE: An investigation of the recent H-1 Turbopump explosion at Neosho revealed that the explosion was probably caused by one of two factors:

- a. Excessive facility inlet ducting combined with a full flow start causing excessive pressure surges and possible cavitation.
- b. Human failure resulting in interference between the LOX impeller and a LOX seal attachment bolt. ✓

OCTOBER 8, 1962

NOTES 10-9-62 DEBUS (TO HOLMES)

1. SA-3 is on schedule with no problem areas.
2. Gemini Program. MSC has furnished a revised, combined layout of Gemini/Apollo checkout facilities. A problem exists for siting these facilities since propellant quantities have not been furnished. We cannot proceed until MSC completes action requested.
3. NASA Railroad. Negotiations are underway between NASA Headquarters and Florida East Coast Railroad based on FEC funding of section between mainland and Wilson, Merritt Island.
4. Atlas Agena. Checkout of Ranger V is on schedule and looks good. Launch date October 16.
5. Operating Plan - FY-63 (Personnel Compensation). Our calculations indicate that the 5.5 million target figure for personnel costs will not support a hiring program adequate to reach 800 positions by the end of the fiscal year. A submission was made to Headquarters showing the total cost required to support the 800 personnel; this showed a requirement for \$6,753,000 in lieu of the \$5,533,000 provided as a target limitation. At the direction of Headquarters we have computed personnel strength based on the 5.5 million limitation; this indicates that we will only be able to reach an end-of-the-year strength of 675 people. This number is already vouchered out within LOC.
6. Proposed TNT Equivalency Tests. BRL has pulled out of the program. Tests must, therefore, be performed by some other (as yet unselected) governmental agency, such as the Navy, White Sands, or Edwards Air Force Base. Contacts are being made at the present time and a selection will be made as soon as possible.
7. Diluzio. In a telephone call on Monday, October 8, Diluzio expressed to me that his interests were still very strong. The reason for his offering to select somebody else was not indecision, but an offer for "a way out" to me. Present status: By October 19, he will have had another medical examination of his son and at that time, make final determination as to whether he can or cannot consent to join us. In the meantime, Al Siepert is scanning for possible other incumbents who will be interviewed as soon as possible.
8. Monthly Meeting Date: I plan to participate in the Apollo briefing with Webb on Saturday, October 20, therefore, the afternoon of Friday, October 19, if convenient to you, appears to be a feasible date for our monthly half-day meeting as previously agreed. Agenda of subject items will be submitted by Monday of next week.

ATTACHMENT

8. Management Conference Item. CIA brief in Langley has again raised questions in my mind. I have appointed a high level expert task force of five to spend a day or two in Washington to go over and digest information available to DOD and CIA.

NOTES 10-8-62 GORMAN

B10/8

1. EMERGENCY ACTIONS: Reference Dr. Lange's NOTES of 10-1-62 (copy attached) Item #6. Funds were received for the Hydrostatic Test Facility in Huntsville. A contract has been signed with Sullivan, Long, and Hagerty for the construction. Funds were also received for the S-II facilities at Rocketdyne and Seal Beach. An urgent action telegram has been prepared on the Michoud facility funds. These funds are in the FY 63 budget signed by the President last week. I think that everything that can be done has been done by OMSF; but the teletype is ready if you want to sign it.

→ let's wait one more week!

2. WEEKLY REPORT TO HOLMES: LOC's weekly notes to Holmes cover a variety of subjects. Many are of the management and administrative type. While I receive this kind of information from the various offices, on a weekly basis, I have not put it in our Monday morning notes. I plan to contact Holmes' office to see whether OMSF finds this kind of information useful. ✓

3. H-1 ENGINE: The H-1 Engine contracts and procurement functions have been transferred to MSFC from Western Operations Office. In-process procurement actions will be definitized by Procurement and Contracts Office. ✓

4. BOB CHARLES' VISIT TO MARSHALL: Mr. Bob Charles, of the Administrator's staff, has been invited to review the status of our negotiations with Boeing on Thursday of this week, and to participate as a consultant in the negotiations with Boeing on the matter of costing-out the S-1C. In talking to Charles this morning, it is unlikely that he will be here before Tuesday of next week. ✓

Jim

1. C-1: S-I-3 - As of 8-28, 10th day of pre-launch checks completed with no indications of problem areas. ✓
 S-I-4 - Full duration test of 123 sec. on 9-26. To be removed from test stand 10-1. ✓
 S-IV - Battleship: Successful 60 sec. hot firing on 9-24. 420 sec firing attempted 9-29. Cutoff at 44 sec. due to helium heater fuel rich mixture and human error. Rescheduled for 10-1. ✓
 S-IV-5: Calibration completed. Now in hydrostatic tower for leak checks. Prefitting of tile insulation installation to start 10-4. ✓
2. C-5: S-IC - Contract Negotiations on Statement of Work - Significant progress has been made. Expected to be complete on/about 10-4. ✓
 Wichita: Contracting Officer has been advised to modify 90-day extension (contract NAS8-2577) with regard to NPC 200-2 requirements. Inspection and acceptance requirements will now be specified by M-ME with coordination of QUAL. ✓
 Vertical Assembly Building - Foundation contract award to Ross Corporation on 10-1 by M-P&C. Scheduled award date was 9-20. This is another slippage to Plan IV for Dynamic Vehicle (one month as reported 9-24). ✓
 S-II - Contract: NAA signed with revised PERT and financial reporting clauses on 9-24, to MSFC on 9-25. Awaiting approval by NASA Headquarters. ✓
 Checkout Computer: NAA has been directed to use the Control Data Corporation 924A. ✓
 S-IVB - Verbal indications from Headquarters that there is no problem in obtaining design funds for SACTO facilities, and construction funds will be available for presently scheduled awards. (\$180,000 C of F funds released). ✓
3. Guidance System: Preliminary C-1, C-IB, and C-5 Instrument Unit (and astronics equipment) schedules are completed. Now being checked by M-ASTR and M-P&VE. ✓
4. APOLLO: Emergency Detection System - First MSFC-MSD meeting took place at MSFC on 9-26, EDS to be open loop on SA-9, closed loop on SA-10. Meeting at MSD on 10-1. ✓
 Charter Change: Meeting with Rudolph (OMSF) resulted in proposal for Shea to chair Review Board - leaving SATURN/APOLLO Coordination Panels untouched. ✓
 C-1/GEMINI Circumlunar Study: Preliminary results look marginal. ✓
5. Inflatable Space Station: Presentation to M-DIR by M-SAT on 9-27 for a "bonus", payload on SA-8. M-DIR asked for briefing by Goodyear Aircraft prior to next Manned Space Council Meeting. ✓

6. Urgent Action: C-5 facilities are becoming critical for: (1) hydrostatic facilities in M-ME; (2) Funds available for Vertical Assembly Building at Michoud; (3) Funds available for S-II increments at both Rocketdyne and Seal Beach. Recommend that due to complex communication channel and urgency of actions that these items be placed in "urgent action" category. Should be documented by M-PEO.

Dr. Lange: Suggestion for improvement -- report some items every other or 3 week. Give more information on fewer items. Jan 10-1

RUSH

B10-1

B 10/2

1. PLANT ACTIVATION

Machines received from Industrial Reserves are being installed in CCSD area. ✓

* 2. S-I IN-PLANT ACTIVITIES

gen.

a. Lox tank #3 (70" diameter) received at Michoud October 3, 1962.

b. Fabrication of Thrust Rings (upper and lower) began October 4, 1962.

c. Started Sub-Assembly of Outrigger Barrel Section and Shear Boxes for Thrust Rings. ✓

3. GSA DISPOSAL OF FOUNDRY EQUIPMENT

General Services Administration has awarded a contract to the Luria Brothers and Company, Inc., of Houston, Texas, for the purchase and removal of foundry equipment at Michoud Operations. The Luria Brothers submitted a bid of \$55,760.00 (which will be paid to the government). ✓

NOTES 10/8/62 DEBUS

Buys

No NOTES received this date.

B 10/8

* 1. SA-5 AEROELASTIC PROBLEM: The SA-5 aeroelastic wind tunnel tests previously scheduled for September 1962 at the Langley Research Center have slipped to the middle of November 1962. This should have no adverse effects on the Block II program since SA-5 will definitely fly with the Jupiter nose cone anyway. The full scale dynamic test scheduled for later this year will be conducted with the Jupiter nose cone. With increased evidence from other tests it becomes more and more reassuring that no severe aeroelastic problems will exist with the launch vehicle--Apollo payload configuration. ✓✓

2. LLS PROGRESS REPORTING TECHNIQUE: Procedures for reporting progress on our LLS studies to OMSF have been agreed upon by Mr. W. B. Taylor, Assistant Director for Engineering Studies, OMSF, Mr. Koelle and Mr. de Fries. There will be no mid-term or other interim presentations nor will any fully integrated interim report be submitted prior to December 1962. Instead, working papers that become available on individual subjects under study will be made available to OMSF through Mr. de Fries. These packages will be prepared from material generated in the division. The reports are informal and are classified as unofficial working papers. They are always addressed to Dr. W. A. Lee, Director of Systems Studies, OMSF. Two reports have been sent so far. ✓

E.G. When do you suggest to have an internal MSFC mid-term briefing? Koelle gave me a rough rundown a few weeks ago. Maybe we should have a more thorough one in early December.

B 10/8

B10/8

1. EMERGENCY ACTIONS: Reference Dr. Lange's NOTES of 10-1-62 (copy attached) Item #6. Funds were received for the Hydrostatic Test Facility in Huntsville. A contract has been signed with Sullivan, Long, and Hagerty for the construction. Funds were also received for the S-II facilities at Rocketdyne and Seal Beach. An urgent action telegram has been prepared on the Michoud facility funds. These funds are in the FY 63 budget signed by the President last week. I think that everything that can be done has been done by OMSF; but the teletype is ready if you want to sign it.

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Jim

1. INSPECTION REPORTING ACTIVITIES: The following chart depicts the number of Analysis Record Tags, Defect Reports, Inspection and Acceptance Requests and Final Disposition Cards processed during the month of September.

Analysis Record Tags	2159
Defect Reports	563
Inspection and Acceptance Requests	45
Final Disposition Cards	281

An Analysis Record Tag is attached to a component or to a lot of similar components prior to inspection and when completed serves as a record of acceptance of that component.

A Defect Report serves as a record of components which do not meet specifications. It consists of several copies; one is retained by the inspector for his records, one is sent for insertion into the computer file system and the third, or "hard" copy is attached to the defective component.

Inspection and Acceptance Requests are initiated by the receiving MSFC organization and are used for requesting special inspection on stock items such as transistors, resistors, fasteners, screws, bolts, etc.

The Final Disposition Card is in reality the "hard" card of the Defect Report which "closes" the case on the defective component when returned to the Quality Assurance Division.

*2. NORTHEASTERN AREA FIELD REPRESENTATIVE: The Quality Assurance Division has established an office at the NASA Northeastern Office, Cambridge, Massachusetts, for the implementation of our efforts in the Boston area. Mr. Bertram Monty is in charge of this office which opened October 1, 1962.

3. PRESENTATION TO ASQC: Personnel of this division recently gave a presentation at the third annual Symposium, San Antonio Section, American Society for Quality Control. The subject of the presentation was the implementation of the NASA Quality Publications; NPC's 200-1, 200-2, and 200-3.

4. SA-6 PROPELLANT TANKS: All propellant tanks for SA-6 vehicle have been received at MSFC. SA-6 H and SA-6 D tanks are to be pressure tested and are expected to be released by October 6, 1962 for further assembly. All other SA-6 tanks have been released to Manufacturing Engineering Division. Traces of copper were discovered in four of the SA-6 tanks but after Propulsion & Vehicle Engineering Division made the proper checks, this condition was waived.

B 10/8

* 1. SELECTION OF ACTUATORS FOR F-1: We have evaluated nine proposals on these actuators and have selected Moog Servocontrols as the best source. We would like to have gone to two sources, but had to abandon this approach for two reasons:

a. Funding situation.

b. The time schedule did not allow sufficient time to evaluate the first R&D items before an additional follow-on order had to be processed.

We will now come together with Boeing to discuss our findings before we finalize contract. ✓

B10/8

1. S-1-4:

Deformation to the shroud panels at each of the outrigger holes was caused as a result of the duration firing of this stage. The LOX tanks were opened at M-ME and deformation to the lowest slosh baffles was noted on all the outboard tanks at the outboard position. M-PSVE (Hellebrand) has been made aware of this situation. The possibility of some connection between this damage and the shroud deformation is being investigated. In addition, deformation of the vortex devices in some of the suction lines was found in the LOX tanks.

2. SA-T4.5 TESTING:

Preparation for firing is progressing satisfactorily. It may be possible, with the judicious use of overtime, to fire 10/18/62. If this is not possible, then the first firing will be 10/24/62. ✓

3. CENTAUR F-2 STATIC FIRING:

Representatives from Test Division will be present for the 60-second firing of this stage planned this week. ✓

4. S-IV BATTLESHIP TESTING, DAC (Re: NOTES 10/1/62 Heimbürg, attached):

In reference to comment in last notes - the helium heater system is of a type that analytical data and bench testing give only general direction; therefore, some "cut and try" with the full-scale system with all components operating is required. In this case, the pressurizing gas had a higher "collapse factor" than predicted (i.e., the pressurizing gas had a greater rate of cooling than anticipated thereby causing pressure decay.)

A satisfactory 420-second duration firing was run, 10/4/62. All diffusers sustained some damage during the run. Next firing scheduled, 10/13/62. ✓

5. RL10 ENGINE TEST, MSFC: ← Please invite me next time to

A satisfactory 40-second duration firing was performed, 10/5/62. No damage to engine or stand equipment. ✓

*6. MTF:

Meeting today to finalize the S-II test stand configuration. Test stand criteria to be initiated by A-E contractor, 10/9/62. This office is anticipating receipt of \$150,000.00 advance design funds by 10/12/62, which will permit completion of criteria of certain items of S-II complex. ✓

ATTACHMENT:

NOTES 10/1/62 Heimbürg

L. Hausmann
Please fill
in your side
of the
story.
B

1. FLIGHT SIMULATION FACILITY: The construction work on the building is about 90 to 95 percent completed. I am not sure of the status of the hardware - this should come from Boehm. The last I heard, the request for bids was out but no contract had been let.
2. *HEADQUARTERS ADP MEETING: In response to the memo from Siepert dated September 19, 1962, on the Ad Hoc Group Meeting on administrative ADP procedures, this Center is sending 4 representatives to meet with the ADP people from other Centers to discuss the mechanization of administrative procedures as implemented at the various centers. The meeting is to be held October 10-11-12 and our representatives will be C. L. Bradshaw, W. H. Fortenberry, M-COMP; Paul Eddy, M-FIN; and Henry Bent, M-CP-M. / It is possible that this may be of interest to Holmes, Lilly, etc. (Mr. Gorman received copy of subject memo.) ✓

1. CENTAUR:

The majority of the Centaur Office is at Lewis for the week to assist in the transfer activities. It is anticipated that this level of participation will be required for about two weeks. Afterward, the efforts should drop off rapidly with the resultant effect that Centaur people will be available at MSFC. ✓

2. AGENA:

a. Agenda Program Presentation: This office presented its recommendations for resolution of current NASA Agena program problems to Mr. Cartright and the OSS staff on 10-3-62. Essentially, we recommended a thorough evaluation of the total Atlas system (660 man months of effort over three (3) months), implementation of an appropriate improvement program as evolved from the evaluation, active, influential and continuing NASA participation in the Standard Atlas and Agena programs, and assignment of direction and control of AMR Atlas/Agena launch operations to LOC. It is now planned that this presentation will be made to Dr. Seamans within the next two weeks.

Further, we advised the OSS personnel of your position relative to MSFC becoming involved in the Atlas program to the extent it appears will be required. *H.H. is willing to re-consider if you feel I should* B

b. Ranger 5: Prelaunch checks are continuing satisfactorily on both the Agena vehicle and the Atlas booster. No significant problems are reported. JPL also reports no problem with the Ranger 5 spacecraft. Agena will be mated to the Atlas on Thursday, the spacecraft mated on Saturday. F-1 day checks are scheduled for Monday. The launch window for the first day (Oct. 16) is from 9:40 AM to 12:01 PM EST. The launch azimuth is for 96° to 111° and there is a 4 day window. Evaluation of Mariner 2 Agena operation indicates a discrepancy between tracking, telemetry data and actual trajectory flown. There is a 1.5° bias against the horizon which is not verified by telemetry. By next Thursday a recommendation will be made whether or not the RA-5 launch should be delayed because of this. An adverse recommendation would delay RA-5 for one month. ✓

c. Eccentric Orbiting Geophysical Observatory (EOGO): NASA Hq has notified MSFC of a five months slip in the launch dates for the EOGO missions. The reason is apparently problems with the spacecraft. ✓

d. Mariner R-2: The spacecraft is continuing on its journey to Venus. JPL reports all actions are occurring normally with the exception of unscheduled magnetometer calibrations. This is under investigation. ✓

e. S-27: The S-27 is in a near polar circular orbit and is continuing to send back good telemetry data. The latest orbital parameters from GSFC are:

Perigee	618.66	Statute Mi. (Nominal 618)
Apogee	641.14	Statute Mi. (Nominal 621)
Inclination <i>H.H.</i>	80.464	Degrees (Nominal 80°) ✓

Please prepare some suitable "well-done" letters (with P10) to individuals deserving a pat on the back for their part in S-27 B

B 10/8

1. M-1

It will be April 1963 before we will know what NOVA we might want and only then will we be able to specify what kind of engine we want. My best guess at this time is:

Thrust: 3,000,000 lb (50% throttleable)

Advanced nozzle which can operate at sea level as well as at altitude.

Combustion Pressure: 3,000 psi

Designed for multiple reuse ✓

likely not a "combined" design? Several engines, one nozzle.

You might want to spread the word that we would like to keep the door open for a complete change of the M-1 specifications.

I have done that already.

2. EARLY MANNED PLANETARY FLIGHTS

Silverstein agrees and is ready to hear our desires B

I just returned from the midterm reviews of our planetary study contracts at GD/A, Aeronutronic and Lockheed. These studies are important for NOVA size and timing. One thing comes out loud and clear: We are in a box! This is not yet a crisis, but soon may become one. There is a definite launch window for Mars in the early Seventies (1973, maybe 1975), as the energy requirements will go up rapidly in the later Seventies due to the eccentricity of the Mars orbit. Also the solar flare minimum is in the years 1972/74. On the other hand, we need a high thrust nuclear engine (about 700K) to make a fast (1-1/2-year) roundtrip, which takes 10 years to develop. If we do not get a decision next year for the facilities for this engine, we will probably not make the 1973 launch date. For the 1975 date we need a 900-sec I_{sp} , 30K tungsten reactor which has a leadtime of about 12 years. If we miss this launch window (1973/75) for a Mars landing, we might have to wait 14 (!) years for another chance. By April next year we should be able to come up with clear-cut alternatives for NOVA, as well as the early manned planetary exploration.

H.H.K. Interesting. Suggest, rather than just ringing alarm, you prepare several alternate package proposals, none over 10 pages thick. Should be geared to whatever NOVA we'll come up with, of course
B

3 4/3

*1. Saturn S-I: Here are a few statistical figures on ME Division support to CCSD at Michoud. Since December 1961 ME Division has: (a) Received approximately 225 Chrysler employees for orientation and training. This figure does not include personnel under Engineering Service Contract. (b) Transferred to CCSD 1,635 tooling drawings, 330 copies of manufacturing plans, 95 copies of manufacturing specifications and 6,000 process sheets. (c) Furnished master gages and drill jigs to CCSD. (d) Responded to over 1,000 (a conservative estimate) requests for special information such as flow charts, photographs, IBM listings on hardware and raw material requirements, etc. (e) Participated in approximately 85 meetings of various types either at Michoud or Huntsville, including scheduled tooling meetings. ✓

2. Facilities: The contract for construction of the Hydrostatic Test Tower was awarded to Sullivan, Long and Haggerty, Birmingham, Alabama, on August 4, 1962. The contract provides for completion of the structure (phase 1) within 320 calendar days (August 20, 1963) and completion of the installation of equipment for hydrostatic testing and chemical cleaning (phase 2) within 420 calendar days (November 28, 1963). Studies are under way to determine the critical path for the construction and to determine premium funds required for advancing the building occupancy date which has now slipped two months behind schedule date. ✓

*3. S-IC: Taking a realistic look at the S-IC schedules we see three critical areas where delays are showing up: (a) Design documentation for the containers and thrust structure are approximately 6 to 8 weeks late. (b) The Hydrostatic Test Tower will be approximately 2 months late. (c) Manufacturing of gore segments at Wichita will require more time than anticipated. In my opinion we were both overly optimistic in our estimation of this forming task. Here are a few figures to graphically illustrate the magnitude of this job. The hydraulic bulge forming fixtures require \$160,000 for material and approximately 90,000 feet of welding (according to statements by Boeing, counting each single welding pass). Unfortunately, and in all probability this will be more than 2 months late. ✓

4. EB Gun Welding: (Reference your question to my Notes 10-1-62) (a) At the present we consider EB gun welding only for the Y-Ring because of the many weld passes (up to 60) required by conventional welding for this joint. After gaining experience in heavy gage EB welding we might apply it later to the longitudinal welds of the cylindrical sections. To build vacuum chambers for girth welds would require a long development time. (b) Adoption of EB welding for Y-Ring would eliminate the tooling for welding plate segments into rings at Michoud. Machining operations by Boring Mill would practically not be affected. ✓

Notes: 10-8-62 Lange

B. 10/8

- * 1. C-1: SA-3 - Prelaunch checks continue satisfactorily. No schedule delay is anticipated. ✓
SA-74.5 - Installed on Test Stand, tests to resume 10-24-62. ✓
S-IV - Battleship - 420 sec firing on 10-4-62. All vehicle parameters good, except Helium Heater, which operated only 70 seconds. Exit sections of all diffusers showed overheating and were damaged. ✓
- 2. C-5: S-IC - Negotiation with Boeing on Technical Work Statement were completed. Firm cost proposal is expected 10-5-62. ✓
F-1 Engine - instability problem is still unresolved. Development testing at Rocketdyne continues. ✓
C-5/S-IC CSE Program in process of being definitized. An IBM program is being established jointly with Boeing to provide an overall program perspective with an immediate requirement for pricing the S-IC Peculiar CSE program at Michoud. *Don't understand what you mean. S*
* V-TEST indicated that due to more definitive engine design information, an increase of the S-IC transporter rear wheel width from 36 to 37 1/2 feet is anticipated. Since skate design of the Michoud Vertical Ass'y Building and the transporter design must be compatible, the redesign of the skate installation is under way. Skate design concept is being finalized to accept a transporter with 38 feet maximum width. ✓
* S-II - ~~Definitive contract is still being reviewed by HQ's.~~ ✓ *Action*
~~Information received 10/9/62 from HQ's that definitive contract had been approved & was being released. (Per Pramlet m-SAT 10/9/62)~~
Facility funds have been made available by HQ's. ✓
AP approved NAA waiver for battleship testing at Santa Susana with one "string" attached which calls for test to determine explosive potential of clustered engines. NAA test program is expected 10-8-62 for NSFC's approval. ✓
- 3. Guidance System - Status of IBM contracts supporting SATURN Instrument Unit Development was forwarded to M-DIR 10-4-62. ✓
Upon request of Mr. Buckett, Missile Intelligence, AMC, certain information pertaining to SATURN flights were furnished for intelligence use. ✓
- 4. APOLLO: Mr. Frick, MSC, plans countervisit to Huntsville for APOLLO Status Briefing late October.
Astronauts (old and new ones) plan Huntsville visit late November for overall briefing on C-1 and C-1B. ✓

9/62

Dr. von Braun's Comments on Notes 10-1-62 Lange

for Michoud or Anteville → Vertical Assembly Building - Foundation contract award to Ross Corporation on 10-1 by M-P&C. Scheduled award date was 9-20. This is another slippage to Plan IV for Dynamic Vehicle (one month as reported 9-24). ✓

For Michoud ✓

O.L.
Charter Change: Meeting with Rudolph (OMSP) resulted in proposal for to chair Review Board - leaving SATURN/APOLLO Coordination Panels untouched.

Dr. Rudolph is carrying the ball on this and is keeping you informed directly. ✓

O.L.
agree, please implement.
6. Urgent Action: C-5 facilities are becoming critical for: (1) hydrostatic facilities in M-PE; (2) Funds available for Vertical Assembly Building at Michoud; (3) Funds available for S-II increments at both Rocketdyne and Seal Beach. Recommend that due to complex communication channel and urgency of actions that these items be placed in "urgent action" category. Should be documented by M-PEO.

- RUSH
B10-1
1. Contract for Hydrostatic Facilities in M-PE was awarded 10-4-62 by M-P&C. ✓
 2. Contract for foundation of the Vertical Assembly Building at Michoud was awarded to Ross Corporation of New Orleans, La. on 10-2-62 for approximately .575 Millions. ✓
 3. See notes of 10-8-62. ✓

NOTES 10-8-62 MAUS

B 10/8

1. DATA FOR PRESENTATION TO NASA ADMINISTRATOR - At the request of OMSF, we have supplied data for use by Mr. Rosen and Mr. Lilly in a presentation to Mr. Webb to emphasize the necessity for a larger OMSF budget for this fiscal year or for early cut backs in the contractor buildup. Data supplied included a tabulation by quarters from FY 61 through FY 64 of manpower and overtime by both civil service and contractor for each stage of the C-1, C-1B and C-5 programs, and for each engine program. ✓
2. LONG RANGE PLAN - Office of Space Sciences furnished copies of their draft Long Range Plan. We are coordinating review and preparation of MSFC comments and recommendations. ✓
3. MSFC FY 64 INSTITUTIONAL BUDGET - Completed and submitted to headquarters last week. ✓
4. C of P PROCEDURE STUDY GROUP - At Mr. Gorman's request, we are appointing a study group to improve local procedures for handling of C of P projects. This group will also develop recommendations for improvement of headquarters' handling of these projects. ✓
5. SCHEDULING PROCEDURE - Copies of a draft revision to the OMSF Scheduling Procedure have been received for comment. The level of detail required by this procedure has not been formally established, however, the August 3, 1962 call for a report against the scheduling procedure required excessive detail. This scheduling procedure is a 90% duplication of Mr. Rosen's Technical Operating Plan which will be used for the Quarterly Program Review meeting. Both documents require schedule data, funding data, and technical narrative. We have verbally requested Mr. Rosen and Mr. Lilly to combine these two requirements into one reporting system. ✓

B 10/2

1. RIFT: NASA Headquarters has concurred in our recommendation that, since the engine development program no longer requires a flight-type run tank for Engine Test Stand-2, the first RIFT tank (SN-TO-1) be deleted from the RIFT Program. We are currently reprogramming SN-TO-2, a cold flow development vehicle, for an earlier delivery consistent with current fund levels.

There exists an apparent conflict in the role of the Finger-activated Engine Interface Coordination Group with the Marshall Space Flight Center way of doing business. The Nuclear Vehicle Projects Office interpretation is for short term utility, to establish the "who" in the Stage Nuclear-NERVA interface, and to utilize the usual Marshall Space Flight Center working groups for implementation. Mr. Finger expects his group to do the bulk of the technical interface resolution, regardless of the Marshall Space Flight Center interface groups. A strong stand by Marshall Space Flight Center will undoubtedly be required, probably between Dr. von Braun and Mr. Finger. ✓

W.H.
Suggest
you see
me on
this with
Scott.
We have
to lay
our
plan well
if we are
to succeed
B

2. S-IV BATTLESHIP TESTING: Two attempts were made to fire for 420 seconds on 10-1-62. The first attempt was stopped during pre-start because of a simulated signal from the fuel tank low limit pressure switch. On the second attempt the duration was only 7½ seconds because the chamber pressure on engine number three dropped below the red line value of 280 psia.

A successful 420-second static firing was accomplished 10-4-62. This was the first full duration test. Engine performance was satisfactory and chamber pressures were normal. The helium heater was cut off at approximately 90 seconds due to a shift in performance when the fuel tank pressure was stopped. ✓

3. INSTRUMENT UNIT (C-5): The C-5 instrument unit thermoconditioning system will use 60/40 methanol-water solution as a system working fluid. ✓

*4. S-II: The explosive sizing tooling designs for the gores and the completed bulkheads which they only recently defended so strongly against Marshall Space Flight Center's doubts are being abandoned. North American Aviation, Inc. is pulling all stops to come up with a new design. A preliminary review of tooling designs has tentatively been set for 10-17/18-62. ✓

1. Coordination Panel: (Reference Notes 10-1-62 Rudolph)

Mr. Burns of my office discussed with Mr. John Gautraud on Tues., Oct 2, MSFC proposal to replace Review Board by "Super Panel" chaired by Dr. Shea. Mr. Gautraud withheld his opinion - probably until further discussion with Dr. Shea.

2. Saturn C-1/Agana:

My staff member, Mr. Bill Sneed, presented to Dr. Shea on Sept 26 the feasibility of utilizing C-1/Agana for Surveyor flights. Copies of the presentation were forwarded to Central Planning Office, MSFC.

3. Webb Letter to PSAC:

Information re Saturn C-5 Upgraded Capability was forwarded to Office of Systems on Friday, Oct 5. Backup material will be hand-carried to Washington at the end of this week.

I would like to express my appreciation to your people, especially to Willie Mrazek, for their excellent work.

Let me know as soon as something transpires!

Shea expected some action from us.

Now we get

no decision.

B

B0018

1. THERMAL RADIATION SYMPOSIUM: Mr. Heller and four members of the Space Thermodynamics Branch attended a symposium on Measurements of Thermal Radiation Properties, September 5 - 7, at Dayton, Ohio. The meeting was jointly sponsored by NASA, Air Force and National Bureau of Standards. About 200 people attended. Mr. Heller chaired a session on "Measurements at Satellite Temperatures", and gave a paper on "Requirements for Emittance Measurements of Thermal Control Surfaces of Spacecraft." Emphasis was placed on the requirements of APOLLO and the upper stages of SATURN. ✓

If Holman?
is to
work about
our
institution
problem,
he will
eventually
have to
help us
in NASA
it's up to you
on this

2. RESEARCH INSTITUTE: There was a meeting in Tuscaloosa on September 26 between University of Alabama and Office of Space Sciences personnel concerning the UARI grant. Drs. Newell, Smull and Holloway attended from OSS, Dr. Hermann from UARI, and Dr. McCall from MSFC. No clear-cut decisions were reached as far as I can tell, except that the proposal was unacceptable in its present form. We sometimes doubt that an acceptable form exists at all, unless the criticism from Drs. Smull and Holloway is replaced by a positive attitude toward providing some guidance. Drs. McCall, Shelton, Pow and I met and talked on several occasions about the next approach to the acquisition of supporting funds for the Research Institute. It is our intention to work very aggressively on this problem and to help the University of Alabama in the preparation of a new proposal to be submitted to Headquarters. ✓

3. PROJECT HIGH WATER: A symposium sponsored by Dr. Johnson's Physics and Astrophysics Branch and Dr. Kuettner's office was held on October 3 and 4 to discuss atmospheric electricity as observed on the SA-2 Highwater experiment. Guests and consultants from Stanford Research Institute, A. D. Little, General Electric and Army Signal Laboratories participated. The results will be of great value to our planned observations for the SA-3 Highwater experiment. The guests and consultants at this symposium will probably also prove to be useful consultants on the lightning protection studies now underway at General Electric under an LOC contract. ✓

4. CENTAUR VS. SATURN-AGENA: In a telephone conversation on October 5, Dr. Harvey Hall of OMSF commended you very highly on your letter to OSS regarding Centaur and Saturn C-1 Agena. In particular, he felt that the times at which lunar information would become available were so different in the two projects that your proposal would have greatest merits even for this reason alone. He offered his support in case you wish to pursue this matter further. ✓

5. IRE MEETING: As you had requested last month, I presented the banquet speech at the annual IRE meeting in Miami, Florida on October 3 (title - "How Far can we go?"). While there, I attended a very interesting classified session on the Air Force, Navy, Army, and NASA space programs, chaired by Mr. O. Hoberg. The description of the Transit project was particularly impressive. ✓

E.S.

→ We make a complete
C1/Agena design study,
jointly with JPL,
OSS has encouraged this. B

B 10/8

* 1. F-1 ENGINE: The F-1 Engine Stability Ad Hoc Group met at Rocketdyne on 10-2/3-62 to review the latest possible development status and to present NASA recommended methods for solutions to the stability problems. Specialists from Marshall Space Flight Center, Lewis Research Center, Princeton University, and the Air Force attended the meeting. Many constructive proposals were offered during the sessions.

F-1 Engine Acceptance Test Stand Construction Schedule continues to slip due to lack of funds.

As a result of Sam Hoffman's visit here we see some very desirable reassignments within Rocketdyne's technical staff. This emphasizes their realization of the seriousness of the present F-1 problems. ✓

2. J-2 PROGRAM: Engine Number 004 was installed on test stand VTS-3 and was fired five times this past week. The first two firings were for short durations for calibration purposes. The 50-second firing was completely successful. The 45-second firing experienced high back pressure on the LOX pump impeller, apparently caused by leakage past the seal. On 10-4-62 we had the first 250-second run. There was no hardware damage on any of these five firings. ✓✓✓

* 3. RL10 PROGRAM: The throttling program at Pratt and Whitney Aircraft is being delayed on a day-to-day basis pending the availability of funds or authority from NASA Headquarters to recognize anticipatory costs. Dr. Seamans approved \$1.0 million several weeks ago, but no official word has been transmitted to Marshall Space Flight Center. I hope that this is not an indication for not wanting us to handle the management and out of Marshall Space Flight Center.

A throttling test was conducted at Lewis Research Center on 10-2-62 during which thrust level of 10% rated thrust was achieved. During this test gaseous oxygen was injected into the LOX injector cavity at low thrust levels to overcome instability (chugging). Gaseous oxygen injection of approximately 3 to 4% of the LOX flow restored stable operation after chugging was encountered at 20% of rated thrust and at 10% of rated thrust.

H.W.

→ He confirmed to me again that we keep all aspects of the RL-10.

I understand the 1.0 M has been released and Tischler & Rosen now even approve of the use of 1.6 M for test stand modification. B

*Sent a copy
to Klemmberg
Shepherd
10-15-62*

October 11, 1962

NOTE: To Mr. Gorman

FROM: Marion Kent

With regard to Item 3 in Debus' NOTES of 10-9-62 (railroad between mainland and Merritt Island), I contacted "Speedy" Parker for additional information. I will go into a detailed explanation because the developments are quite interesting.

When the Florida East Coast Railroad (FEC) was first contacted by LOC, the railroad was not interested in installing the track. LOC attempted to have the range join them in requesting this service, but there was no interest. However, the Titan group stated they were interested.

Tonnage projections for LOC and the Titan site were worked up for both the construction and operational period.

Jim McCollum was brought into the picture and he brought officials from FEC to the Cape and they were given a briefing of projected requirements. FEC still showed no interest -- they wanted the government to foot the bill. LOC told them that it was not their intention to pay for the track, they would go to the use of barges. Parker stressed that they hammered away at the monetary advantages to the railroad and that LOC had other courses of action. However, after returning to Washington, FEC advised McCollum that they would install the track.

Last week, the situation became a little fuzzy when FEC came in with rates. LOC thinks these are too high. However, they believe they can realize a reduction.

OCTOBER 15, 1962



gan * 1. COL. PEACOCK'S VISIT

Col. Peacock a member of the staff for the House Space Committee visited Michoud Operations on October 10, 1962. He indicated that his prime reason for visiting was to determine if the money (C of F) approved by Congress for FY-63 would be obligated by the end of the fiscal year. He was advised that the money would be obligated. ✓

gan * 2. JOINT S-1/S-1C FACILITIES REVIEW

On October 17, 1962 there will be a joint S-1/S-1C facilities review at Michoud Operations. ✓

3. S-1 QUARTERLY REVIEW

On October 18 and 19, 1962 at Michoud Operations there will be the S-1 Quarterly Review. Representatives from various divisions and office will be present. ✓

4. CHANGE ORDER PROCEDURE

By the end of this week the Change Order Procedure for the S-1 (Chrysler Contract) will be completely implemented. ✓

5. CONSTRUCTION MANAGEMENT

gan * [Mason-Rust who has been selected as Construction Management Contractor for Michoud Operations has completed their preliminary planning and is sufficiently staffed to begin performing the contract scope. P&C has three representatives at Michoud with Contracting Officer's authority to ensure the timely and efficient performance required. Facilities Engineering Office has one individual assigned to Michoud Operations to ensure construction coordination with the Facilities Engineering Office. M-FE is presently considering establishing some program authority at Michoud Operations. ✓

1. SA-3 Operations. Pre-launch preparations of SA-3 are following very closely to the checkout schedule which is available. No checkout problems of any magnitude exist at this time. However, a potential operational problem area does exist. In the history of the SA-3 checkout at MSFC, some difficulty has been experienced with cavitation of the auxiliary hydraulic pumps. This problem and its consequences will be investigated during the week of October 8. ✓

2. CTL Pre-launch Preparations. CTL Jupiter Missile 110 has experienced some difficulty in its checkout sequence during this past week when a short, caused by a misaligned one-shot-relay board, resulted in wiring damage within the main distributor. After examination of the main distributor, it was decided to replace the main distributor with the spare in stock, rather than repair the damaged distributor. This decision was reached because of the inaccessibility of one particular wire in the main distributor which went into a potted connector. This will be the first time we have ever exchanged a main distributor in a missile or launch vehicle at AMR. System tests have been performed with the new distributor and operations, as of this date, appear to be normal. This fast fueling test is presently scheduled for Tuesday, 9 October. ✓

3. The Telemetry Trailer furnished by the Astrionics Division for support of the VHF and PCM telemetry systems on SA-3 has arrived and is being set up at the Microlock facility. ✓

4. ~~See Notes to Holmes attached.~~

Received M-DIR, 10/10/62

1. LLS PROGRESS REPORTING TECHNIQUE: Re: your question on Notes - Geissler - 10-8-62, (copy attached): we suggest having an internal MSFC mid-term briefing on our LLS studies on November 28. Does this tentative date meet with your approval? If so, formal announcements will be sent out to the Marshall technical people involved. This would give sufficient time to prepare for our early December Washington meeting. ✓

2. S-1C BASE HEATING TESTS: The S-1C base heating tests are approximately on schedule at Cornell Aeronautical Laboratory. Model design is complete and fabrication of all parts has begun at MSFC. Transonic testing is expected to begin in mid-December in the Cornell 8' x 8' tunnel. Low supersonic tests are expected to begin in early January in the Lewis Research Center 8' x 6' tunnel. High supersonic tests in the Lewis 10' x 10' tunnel are expected to begin in late January or early February 1963. High altitude tests, which are expected to be made at the completion of the Lewis 10' x 10' tests, should begin at Cornell by the end of February. ✓

Testing in the three wind tunnels named above involves a new phase of the short duration technique. The initial phase had applied to upper stages operating at high altitudes, where simulation of the ambient flow was not necessary, and testing could be done in a vacuum tank. This new phase applies to lower altitudes and includes the ambient flow by running the tests in wind tunnels. Exploratory tests were run with the S-1 (C-1) model in the Cornell 8' x 8' transonic tunnel; results were in good agreement with long duration tests in the AEDC and NASA Lewis tunnels, thus proving the feasibility of the short duration technique with ambient flow. ✓

Present plans for the S-1C include, on a stand-by basis, some long duration tests at AEDC using a single chamber rocket with 5 nozzles; the rocket is designed by Test Division. This rocket would be used if trouble should develop with the 2nd phase of the short duration technique. The success meanwhile obtained at Cornell with the S-1 model makes trouble with the S-1C model very ^{un}likely. Nevertheless, the long duration test will be kept on stand-by until the end of this year, and the Test Division proceeds with the paper-design of its rocket; we expect that it will be dropped at the end of this year. Should we unexpectedly have to activate it, however, engine construction and testing would be finished in March 63, and conventional long duration tests could begin as early as April 63. This course provides an optimum of certainty and cost. ✓

← E.F.

I presume this entire program is covered with documentary films. Suggest, unless you have made other arrangements already, you

↓ E.F.

I suggested 30 November for Model Files since we expect the Astronauts (new + old) to visit Marshall on 28/29 Nov. Please check w/ Dr. Kuehner whether this date is still firm

discuss preparation of a "Base Heating" 15 min film with PIO, B

BW/16

Yes, but see

* gen

B 10/16

NOTES 10-15-62 GORMAN

1. MICHOUD - PLANT MODIFICATIONS: Some of our Procurement and Contract people are now at Michoud to work with George Constan and his staff on the implementation and contract management of the plant modifications. This is being set up in such a way so that decisions can be made at Michoud. ✓ George Constan has designated a three member working group to expedite the plant modifications, with the Chairman from George's staff; first member from Facilities Engineering; and second member from Procurement and Contracts. The group is assigned a designated member from the A-E contractor, Mason-Rust, Boeing, and Chrysler. This is a decision making and action group. ✓

2. FRANK CONNELL - Tom Dixon called this morning on behalf of Frank Connell. Although the major part of his experience has been in industry, Tom recommends him very highly for a spot in our Mississippi Test Facility organization. Plans are that Mr. Connell will arrive here tomorrow for a job interview. ✓

B. 10/16

4

1. RELATIONSHIP BETWEEN THE MANUFACTURING ENGINEERING DIVISION AND THE QUALITY ASSURANCE DIVISION: Since I took over the Quality Assurance Division more than two years ago, it has been one of my main concerns to improve the relationship between the Quality Assurance Division and the other Divisions in general and the Manufacturing Engineering Division in particular. As I received very good support in this effort by Mr. Maus the progress was satisfactory or even better. Unfortunately the rate of progress has been reduced to almost a trickle since Mr. Maus was reassigned. The numerous discussions I have had with Mr. Kuers on this subject usually lead nowhere due to a basic difference in thinking concerning the responsibilities of the Quality Assurance Division. Mr. Kuers takes the standpoint that the job of the Quality Assurance Division is finished with the determination whether or not a part, component, or system has been made to drawings and specifications no matter how wrong the drawings and specifications are, while I maintain that we can release for actual use only if the design intent is met because the drawings and specifications often are in error or incomplete and might require corrective action; I feel obligated to initiate the corrective action and, to a certain extent, even to follow it up. Mr. Kuers wants to deny this Division the right to do analysis work which I feel is necessary to determine the true cause of a failure and which is usually done in cooperation with representatives of other Divisions involved in the design or manufacturing.

E. E. Howard
Please look up this. Maybe you want to call Frau + Kuers in together. This is precisely the way I see it! B

In essence:

Mr. Kuers wants to limit the activities of this Division to inspection which is the examination including testing, of contract work, articles, and services to determine conformance to contract requirements, while I maintain that we are obligated to quality assurance which is a planned and systematic pattern of all actions necessary to provide adequate confidence that the end items will perform satisfactorily in actual operations.

outsiders (we will soon have reliability assessors etc) crawl all over us, and ME in particular! B

In order to fulfill this obligation, the Quality Assurance Division has to make sure that quality requirements are satisfied throughout all phases of contract performance and has to have access to and influence on all Offices and Divisions which contribute to the contract. The latter philosophy is the basis of the NASA Quality Publications and all the effort which is connected with them.

Your guidance to the two Divisions involved in this controversy will be appreciated and will help to reduce the number of friction areas.

Dieter G.

I agree with your view. But be prudent to avoid excesses like that tool inspection problem at KSC. We discussed this other day. In this case I felt QAL was going too far. B

Not for interdivisional circulation! B

No! You are! B

Sure!

21

B 10/16

NOTES - HAEUSSERMANN, 10/15/62

1. CELESTIAL BODY MOTION SIMULATOR - 2nd PHASE OF FLIGHT SIMULATION FACILITY: (Reference Hoelzer note of 10/8/62, copy attached.) Our side of the story is presented on the attachment, below Hoelzer's note. ✓

* 2. REDESIGN OF C-1 INSTRUMENT UNIT: In close coordination with P&VE we intend to redesign the C-1 instrument unit (IU). We will utilize the C-5 concept of an unpressurized instrument unit for the C-1 IU redesign, and introduce this concept on vehicle SA-9. Weight saving of approximately 2,000 pounds is connected with this redesign. ✓

0.2
11 22.2
B

3. FABRICATION DELAYS AT DOUGLAS: When Saturn work reaches the Douglas fabrication shops, it is given a lower priority than other DAC projects thus causing the fabrication of many items to fall behind schedule. This is especially true with the Saturn Electrical GSE. Component testing and evaluation suffers in a like manner. This is apparently beyond the control of DAC design groups. We have DX. ✓

4. HYDRAULIC SYSTEMS AGREEMENT: An agreement was reached about 10 days ago between W. Mrazek and me on the responsibilities of P&VE and Astrionics in the hydraulic systems area based on your recent comments. Willy has not yet distributed the memo, since he wants to have Mr. Paul's comments first. ✓

1 Enc:

Hoelzer Note of 10/8/62 with comments

Dr. Lange
NOTE
gcm
Has come?
B.
Hope by next
Notes he will
have distributed
m. B.

20

NOTES 10/15/62 Heimbürg

1. S-I-4:

Reference 10/8/62 NOTES Heimbürg: Attached photos (please return when finished) show the subject damage. These are typical of all outboard LOX tanks. Fuel tanks were untouched. This still remains a mystery. ✓

2. SA-T⁴.5:

It was not possible to achieve firing by 10/18/62; therefore, first firing will be on 10/24/62. Reference 10/8/62 NOTES comments by Dr. von Braun - SA-T⁴.5 does not have SA-5 suction lines, etc.; it does have SA-5 (188K) H-1 engines, and that is about all that could be provided. ✓

3. CENTAUR F-2 STATIC FIRING:

Test Division representatives have been withdrawn from this effort based upon Lewis redirection of program including stop of F-2 static firing. ✓

4. S-IV BATTLESHIP TESTING, DAC:

Repair and modification to diffusers is complete. Testing has been delayed because of inclement weather. ✓

5. RL10 ENGINE TEST, MSFC:

A satisfactory 40-second duration firing was performed 10/11/62. You were extended an invitation, but were out of town. The next firing will be in about two weeks; you will be notified when exact date is set. ✓

* 6. MTF:

Jan Meeting on 10/8/62 failed to finalize the S-II test stand configuration as anticipated and reported in last week's NOTES. S-II test stand criteria now scheduled to be initiated by the A-E contractor by 10/22/62. Advance design funds (\$150,000), which will permit completion of criteria of certain items of S-II complex have not been received to date. NASA Headquarters advised that forwarding date for these funds has been moved back from 10/12/62 to 10/22/62. P&C has requested proposal from A-E contractor and will proceed short of negotiating pending receipt of funding authorization. ✓

ATTACHMENTS

1. NOTES 10/8/62
2. PHOTOS

B 10/16

* 1.
Jen

HEADQUARTERS ADP MEETING: The Ad Hoc Group Meeting on administrative ADP procedures called by Mr. Seipert was held last week in Washington and the four members from MSFC indicated in last week's NOTES (copy attached) attended. The purpose of the meeting was two-fold. First, it was intended that a system of free interchange among NASA centers on ADP matters be established. This first meeting was very successful from this standpoint and this interchange should be helpful to all parties. Secondly, the purpose of the meeting was to feel out the various centers on their understanding as to the role of NASA Headquarters in the management of automatic data processing. A draft of a NASA management instruction dealing with ADP was prepared by Headquarters and discussed. The critical point is, as always, how deeply Headquarters should become involved in center acquisitions and programs. MSFC representatives (as did other centers) made it clear that they felt NASA Headquarters should be kept informed as to the center ADP plans for NASA-wide dissemination. They strongly objected to Headquarters control over ADP equipment procurement and center applications placed on this equipment. Headquarters should approve ADP equipment procurement procedures in the center and the overall center ADP plan. They should never become concerned with individual applications except for information purposes. Our representatives had the feeling from Seipert and Grillo that the role of Headquarters should probably be no stronger than that role indicated by the centers. ✓

The old
creeping
NASA
disease
again!

(The
"headquarters"
octopus
strangling
all activity if not
checked continuously)

B10/16

21

1. CENTAUR:

Virtually, all the MSFC Centaur Project Office personnel will be at Lewis again this week, helping with the orderly transfer of Centaur. Additionally, various MSFC Division personnel will be at Lewis on Monday for briefing and organization of study groups formed for the purpose of orienting and familiarizing the Lewis people. These groups will be on travel essentially all this week visiting appropriate contractor and governmental organizations. It is understood that MSFC participation will be limited to familiarization and interpretation of data for Lewis and not for any evaluation of the concerned areas. ✓

2. AGENA:

a. Ranger 5: The launch is still tentatively set for Tuesday morning between the hours of 9:40 AM and 12:01 PM EST. A problem occurred with the spacecraft which definitely jeopardized the first day of the window. ✓

The problem occurred Sunday during a simulated flight check when a transponder failed. This component failure required that the spacecraft be demated and returned to the Explosive Safe Area where the repairs could be made. Repairs were made during the night and the spacecraft is in test at this moment. The test and remating can be completed by midnight tonight; however, to re-sterilize the spacecraft requires approximately another twelve hours which extends into the countdown period of the first day. A decision was made to do a minimum sterilization on the spacecraft and still meet the countdown time. If for some reason the launch is postponed, the spacecraft will be completely sterilized on the pad and will be ready for the Wednesday launch. ✓

b. Mariner R-2: Mariner R-2 status as of 2300 GMT Oct. 11, 1962: Central Computer & Sequencer (CC&S) Cyclic Pulse No. 64 occurred in schedule at 1006 GMT on Oct. 11, 1962. The current antenna hinge and reference angles are 32 and 33 degrees respectively. Deep Space Instrumentation Facility (DSIF) coverage is as usual. The received signal level at Goldstone this date is approximately - 139 DBM. ✓

As of 2400 GMT Oct. 11, 1962, the Mariner R-2 spacecraft was 7.378 million statute miles from the earth and traveling at an earth referenced velocity of 7763 statute miles per hour. ✓

Based on the fifth post midcourse orbit computations, the closest the spacecraft will approach the planet Venus will be 33664 KM (approximately 20,905 statute miles). The time of closest approach is 191003 GMT Dec. 14, 1962. The bus speed at closest approach will be 6.7771 KM/Sec. The time of flight is 109.494 days. ✓

H.H.
Is that good?
What does that mean
of
expected
signal strength
on Dec 14?
B.

NOTES 10-15-62 Koelle

B w/16

1. NOVA

After the provocative Aerojet Advanced-Engine Meeting last Tuesday, a meeting was held between the MSFC Propulsion people (Weidner, Paul, Belew, etc.) and the Lewis people who were here to discuss the M-1 situation and NOVA. As a result of the meeting, it was decided: (1) Not to attempt at this time to make any drastic changes on the M-1 program (but wait for a NOVA decision); (2) Get an in-house effort underway, both here and at Lewis, to evaluate the various advanced engines; and (3) Set March 1st as a target date for selecting a NOVA configuration and deciding on where we go from here with the M-1 engine program. ✓

2. OUT-OF-TOWN

With your permission, I will be on vacation all of next week. I will also be out of town from November 12 - 22 to review six of our study contracts (mid-term reviews). ✓

3. PRESENTATION ON GROWING PAINS OF EUROPEAN SPACE PROGRAM

My brother will be here on TDY in November and I can arrange an informal (1-hour) briefing on their program and difficulties on either November 23, 26 or 27. If yes, what day and time do you prefer? ✓

H.H.K.

late morning
or early
afternoon.
Please button
up with Bonnie
B
(Hope you've
seen my note
re Frutkin)

B10/16

1. ME Division Construction Projects: The following construction projects are presently underway:

<u>PROJECT</u>	<u>COMPLETION DATE</u>
Shelter for C-5 Mock-Up	November 28, 1962
Explosive Forming Facility	January 1963
Hangar Doors, South End, Bldg 4705	December 11, 1962
Increasing Capacity of Cranes, Bldg 4707	October 27, 1962
Enlarging Door, East End, Bldg 4707	December 1, 1962
Bonded Honeycomb Facility	December 22, 1962
Hydrostatic Test Facility Assembly Station	July 31, 1962
Hydrostatic Station	November 28, 1963
Stainless Steel Cleaning and Processing Line	December 5, 1962 ✓

2. SA-4: The S-IV Dummy Stage of SA-4 has been erected vertically on the modification fixture outside of Building 4707 and enclosed by a tent type structure. Modifications are progressing as scheduled to simulate SA-5 configuration. ✓

* 3. S-II Bulkhead: NAA is presently experiencing many problems with planning the manufacture of the explosive forming dies for their common bulkhead. It is now apparent that this is a bottleneck area and if final sizing of the bulkhead faces is required a four to six months delay in schedule can be expected. Meetings of the Manufacturing Engineering Working Group were held this week at NAA in order to arrive at possible solutions to the problems involved with building these dies. We have agreed with NAA that their previous concept of building these dies is not practical and have jointly tentatively agreed to a concept of using a heavy steel plate die with water backup. NAA will present details of this concept during the week of October 22, 1962. It is still our opinion that the best solution, from the manufacturing viewpoint, is to eliminate the need for the close tolerance in the common bulkhead, thus eliminating the need for this explosive sizing operation. It is expected that NAA will also submit a proposal during the week of October 22 on the backup solution of membrane type common bulkhead which would eliminate the need for these close tolerances.

I am really worried about this NAA approach! B

B 10/16

1. C-1: SA-3 - ST-124P is installed. Evaluation of malfunction sequence tests is in process. - No problem areas exist at present time. ✓

* S-I - Quarterly Program Review is scheduled for 10-17 through 19-62 at Michoud. CCSO will present the S-I-8 MSFC plan with 6 month slip. ✓

S-IV - Hydrostatic/Dynamics Stage - insulation, coating and instrumentation completed, dummy engine installation in process. ✓

* Battleship Testing - next firing for 420 second duration is scheduled for 10-18-62. ✓

GSE - three major problem areas exist:

a) several equipment burn-outs occurred due to inadequate overload protection. - DAC redesigns will be approved by MSFC according to Ground Rules for Fusing being established by MSFC. ✓

b) next two GSE sets are approx. 3 months late going into system integration areas. Delivery to sites may be 2 months late. M-SAT is investigating. ✓

c) DAC did not use MSFC approved qualified parts lists. 95% of electrical GSE has to be waived through buy-off, until DAC component can be reviewed and approved. This will require about 2 months. ✓

* 2. C-5: - S-IC - follow-on contract - technical evaluation is under way. P&C action was requested to extend present contract for additional 30 days with no change in Scope of Work & personnel ceiling and approx. \$5,000,000 fund limitation. ✓

* Moog Company was selected servo-actuator contractor after competitive vendor source selection. ✓

S-II - On 10-11-62 \$1.8 Mill have been forwarded to WOO to fund contractor's facility requirements at Santa Susana and Seal Beach. ✓

* Action was inaugurated to direct the contractor to reduce the S-II stage dry weight from 79,105 lbs. to 73,500 lbs. and the cut-off weight from 88,900 lbs to 83,000 lbs. ✓

S-IVB - DAC was advised to maintain separate accounts for S-IVB/C-5 and S-IVB/C-1B programs. ✓

HQ's was requested to provide for Sacramento facilities \$30,000 by 10-10-62, and additional \$2,470,000 by 10-22-62. Corps of Engineers requires \$30,000 to continue foundation exploration and to initiate negotiations for instrumentation design. \$2,470,000 is required for continuation of design, site development construction package and procurement of long lead time items. HQ's indicated that funds will be available as required. ✓

* 3. Guidance System - Eclipse Pioneer delivered first ST-124 to MSFC on 10-1-62. Sled testing is scheduled for end of November 1962. ✓

M-SAT will attend Gyro and Accelerometer Panel of Aerospace Industries Association, Alamo, gordo on 10-15-62 and Inertial Guidance Test Symposium, Holloman AFB, on 10-16 & 17-62. ✓

4. Apollo - Joint meeting of MSFC Emergency Detection Committee and MSC Crew Safety Committee is scheduled for 10-23-62 at MSFC. MSC has reacted quickly to MSFC's questions concerning flight testing the EDS open-loop on SA-9. ✓

5. History of S-II Negotiations - See Attachment 2. ✓

Remedial action
B

22

B 10/16

H.M.

Let's discuss this. B

After you have those inputs

H.M.

Is Heinberg informed? B

NOTES 10-15-62 MAUS

1. Funding and Scheduling Details - We are working with the Project Offices to develop a proposal for consolidating the several reporting procedures requested by OMSF into one official procedure. This proposal will determine the level of details which should be furnished OMSF. We will have a preliminary discussion on this subject, with Dr. Rees at 10:00 a.m. today. We also plan to hold an informal meeting with representatives of MSC and LOC to discuss this procedure and compare notes.

2. Air Transport Requirements - NASA headquarters is holding a briefing this week for selected personnel of Federal Aviation Agency and Civil Aeronautics Board. MSFC will have two participants: W.P. Morrow, Transportation Branch of M-SS, and Walter Kennedy of M-CP who will give presentation on MSFC missions and programs and the dispersed location of our various contractor facilities. Our representative will make an unofficial inquiry to FAA and CAB on the use of aircraft (such as the "pregnant guppie") for transportation of Liquid Hydrogen.

3. Preparation for Management Council Meeting - As a follow-up on your plea at the NASA Management Conference at Langley, we will submit an agenda point "Headquarters - Center Relationships and Procedures" for the October 30 Management Council Meeting. In preparation for this we will determine the specific objectives and prepare a presentation with firm proposals for action by headquarters. We will also establish informal contact with JPL and Goddard on this matter.

*4. PERT - The second meeting of the CCSD PERT Implementation Team was held at MSFC on October 8 and 9. Due to the progress made to date on implementation, the scheduled operational date for PERT reporting on the S-1-8 network has been moved forward to November 21, 1962.

Last week, at Space and Information Division of NAA, we reviewed the interface events on SII stage networks and discussed corrections S&ID will need to make in General Order networks and card decks in preparation for operational reporting scheduled to begin this month.

5. FY 64 Budget Submission - We were directed by TWX from Mr. Holmes to adjust our financial actions and planning to a ceiling of \$773 M for FY 63. This is 192 million lower than the 965 million we considered to be our actual requirement to keep the programs on the present schedules. The package prepared for the Quarterly Program Review meeting is based on the \$773 million ceiling with schedules revised accordingly. We anticipate a call from headquarters for revised FY 64 Detailed Budget Estimates assuming only 773 million for FY 63. It is our understanding that this new call will include ceilings for FY 64.

NOTES 10-15-62 MRAZEK

B10/16

1. RIFT: Direction from Dr. Seamans to Dr. Bisplinghoff involved slippage of flight dates by one year, cancellation of C of F funds for RIFT facilities at Nuclear Rocket Development Station (\$26.0 million) and reduction of Research and Development funds from \$12.8 to \$3.8 million for FY-63. Mr. Finger proposed that the slippage of flight date be accepted, that design money for the facilities be furnished (\$3.4 million), and the Research and Development be reduced to \$10.8 million. Dr. Bisplinghoff and Marshall Space Flight Center concur in this minimum program. By reducing the contract term from 10-1-63 to 8-9-63, the current Lockheed effort can be supported. A decision from Dr. Seamans is imminent on the acceptability of this alternate plan.

WM
Please keep me posted
B

The next full power test of the KIWI is scheduled for the period 11-2/10-62 at the Nuclear Rocket Development Station. If it is deemed advisable to test at low power, this test will be made 11-2/3-62, with full power test one week later. If low power testing is eliminated, primary objectives will be attempted on 11-2/3-62. Should you desire to attend, the necessary arrangements will be made by the Nuclear Vehicle Projects Office.

Unsure
that date
B

2. INSTRUMENT UNIT REDESIGN: As a part of the weight reduction effort directed toward meeting the payload requirements for the C-1, Block II vehicles, a decision was made to redesign the instrument unit for Vehicles SA-111 and subsequent. The redesigned instrument unit is considered for SA-9 to provide a man-rated component by SA-111.

20

NOTES 10-15-62 Rudolph

B 10/16

Coordination Panels:

I will be in Washington tomorrow, 16 Oct, and will find out whether or not Shea and Gautraud agree with the proposal to replace the Review Board by a "Super Panel."

Will let you know results after my return. ✓

B 10/16

1. RESEARCH FUNDS FROM OMSF: Very shortly after our last Board Meeting (Oct. 12) in which you had suggested a substantial increase in our research program in the categories "Improvement of Product Performance and Reliability" and "Advancement of the Art" through Mr. Holmes' office, I was informed by Saturn Systems Office, through Central Planning Office, that existing regulations and practices do not permit us to use part of the Saturn funds for a research program as represented by the two above-named categories. While some individual research tasks probably could be funded, particularly as parts of existing stage development contracts, the bulk of our program would remain "homeless".

Sure! This spontaneous reaction on the part of our Saturn Systems Office indicates very clearly that our effort to obtain research funds through OMSF will be successful only if Mr. Holmes designates and authorizes research program funds for MSFC apart from the Saturn development funds. If the research funds had to go through Mr. Rosen's and Mr. Tischler's offices in the same package with Saturn development funds, they would lose their identity even before reaching MSFC. It would be illogical, and even unfair, to burden SSO with the responsibility of separating the research programs money from the Saturn development money, and of justifying an amount on the order of \$20 M to Mr. Rosen and Mr. Tischler for research projects which are not part of the presently assigned Saturn development projects as handled by Saturn Systems Office.

Sure!

I would therefore like to suggest that you ask Mr. Holmes to authorize you to spend the \$20 M research fund in such a way that they need not be justified by SSO to Mr. Rosen and Mr. Tischler. MSFC would, of course, inform OMSF very conscientiously on how these funds were spent, and what essential research results were obtained.

After Mr. Holmes has authorized the \$20 M for MSFC research, you should decide how these funds should be distributed between Propulsion Supporting Technology and Launch Vehicle Supporting Technology, and how much of the latter should be spent for Advanced Systems Studies (Koelle). ACTION REQUIRED.

2. RESEARCH BUILDING: RPD will send this week, to all staff members of MSFC, a memorandum in which RPD's plans for a new building are described and justified. Your comments to this memorandum would be greatly appreciated. ACTION REQUIRED.

3. REQUEST FOR MORE PERSONNEL: Last week I submitted a request to Dr. Rees for ten to fifteen new spaces. These spaces are urgently needed by RPD for personnel in connection with the very impressive build-up of research-coordinating and other sub-offices in the Program Offices in Headquarters. A detailed justification was attached to this request. Your support of the request for personnel spaces would be sincerely appreciated. ACTION REQUIRED.

4. LH2 TECHNOLOGY PROGRAM: Last week we received a "green light" from Mr. Lombardo of Propulsion and Vehicle Engineering Division to put the Procurement Requests which RPD had solicited for the LH2 Technology Program back in process. Thirteen PR's totalling approximately 800K are now being processed by the Procurement and Contracts Office. ✓

Bonnie
Please retain this Note in my
files All 1 network
B 10/16

B 10/16

* 1. J-2 PROGRAM: An additional successful full duration test was run 10-6-62 with Engine 004 installed on Vertical Test Stand 3. The test was programmed for only 220 seconds due to LOX tankage. No damage to engine hardware or test stand was noted. Total test time on Engine 004 after these runs was 575 seconds. ✓✓

On 10-9-62 a programmed 50-second run with Engine 004 installed on Vertical Test Stand 3 was cut after 44 seconds by pneumatic control system failure. The fuel pump stalled for 250 milliseconds early in the run due to poor propellant conditioning. Early inspection revealed approximately 50% of thrust chamber tubes split. ✓

2. F-1 PROGRAM: Engine 003 with a 5U flat face injector was run 108 seconds of a scheduled 150 second run at 1500K (sea level) thrust. The run was cut when leaks were observed from the expansion segments of the aspirator torus.

Engine 006 with a 5U flat face injector was cut at 85 seconds of a 150-second scheduled test for the same reason as Engine 003. ✓

3. RL10 PROGRAM: Program authority for \$1.0 million for continuing the throttling program at Pratt and Whitney Aircraft has been received at Marshall Space Flight Center. Action is being taken to have the \$1.0 million placed on the throttling contract.

During discussions at Lewis Research Center on 10-11-62 it was learned that Lewis Research Center is of the firm opinion they will have the management responsibility for the RL10 with exception of the present buy of engines. It is not possible at this time to work out the CENTAUR engine stage interfaces with Lewis Research Center.

RL10 Engine FX-124 completed an additional reduced thrust firing at Lewis Research Center. The injection of gaseous helium into the LOX injector at chamber pressures equivalent to 23% of rated thrust was reported to have eliminated the high frequency instability. Gaseous oxygen had been successfully used previously to eliminate instability. ✓

* 4. H-1 PROGRAM: The H-1 contracting has been moved from Western Operations Office to Marshall Space Flight Center. ✓

5. M-1 PROGRAM: Participated in an all day briefing by Aerojet for Abe Silverstein. In view of the study program we had initiated with them earlier, they made a real good showing as to the depth of their analytical approach.

It is my observation that the M-1 Program will not be converted into an all-out state-of-the-art development. These thoughts are taking shape:

a. Do not stop the program. Approximately 6 sets of Research and Development hardware have been released (still in early phases of procurement and manufacturing).

b. Stick essentially to the present approach.

c. Consider secondary injection for vector control (provided the equivalent throw angle requirement is smaller than 3 to 4 degrees).

d. Increase the nominal thrust level to 1.5 million pounds and build enough design margin into turbopump. ✓

HW
I hope
Seamans
will keep
his
promise
to leave
at MSFC
Holmes is
backing us
100%
B

is 7.22
B

GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA

Memorandum

TO See Distribution

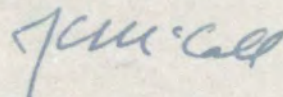
DATE October 17, 1962

FROM *Office of the Director*

SUBJECT Enlarged Distribution of Weekly NOTES

Regarding the memorandum dated October 15, 1962, stating that copies of NOTES will now be distributed to all creators of the NOTES, it should be added that these NOTES are for the division directors only, and should not be reproduced or distributed into the organization.

In order to facilitate this enlarged distribution, in the future Weekly NOTES should be submitted in original and 20 copies. The deadline for the original copy of the NOTES will remain 12:00 noon, Monday. Allowing for reproduction delays, however, the 20 copies may be submitted as late as 2:00 p.m., Monday.



J. C. McCall
Assistant to the Director

DISTRIBUTION:

M-DEP-ADM, Mr. Gorman
M-MICH, Mr. Constan
M-LVOD, Dr. Debus
M-AERO, Dr. Geissler
M-QUAL, Mr. Grau
M-ASTR, Dr. Haeussermann
M-TEST, Mr. Heimburg
M-COMP, Dr. Hoelzer
M-L&M, Mr. Hueter
M-FPO, Mr. Koelle
M-ME, Mr. Kuers
M-SAT, Dr. Lange
M-CP, Mr. Maus
M-P&VE, Mr. Mrazek/Mr. Weidner
M-HME, Dr. Rudolph
M-RP, Dr. Stuhlinger

B 10/16

NOTES 10-15-62 GORMAN

1. MICHOUD - PLANT MODIFICATIONS: Some of our Procurement and Contract people are now at Michoud to work with George Constan and his staff on the implementation and contract management of the plant modifications. This is being set up in such a way so that decisions can be made at Michoud. ✓
George Constan has designated a three member working group to expedite the plant modifications, with the Chairman from George's staff; first member from Facilities Engineering; and second member from Procurement and Contracts. The group is assigned a designated member from the A-E contractor, Mason-Rust, Boeing, and Chrysler. This is a decision making and action group. ✓

2. FRANK CONNELL - Tom Dixon called this morning on behalf of Frank Connell. Although the major part of his experience has been in industry, Tom recommends him very highly for a spot in our Mississippi Test Facility organization. Plans are that Mr. Connell will arrive here tomorrow for a job interview. ✓

OCTOBER. 22, 1962.

NOTES 10-22-62 GORMAN

Bur/22

1. M-1 ENGINE TRANSFER: We are still treading water on the M-1 transfer to Lewis. As you know, this involves \$35 million of the 63 budget. I will need a reading from you early this week as to whether we should delay the transfer any longer. In the meantime we have forwarded amendments to the M-1 Engine Letter Contract to Aerojet for execution which extends the definitization date of both contracts to November 30.

← Not consistent with Weidner's NOTES
see Weidner's NOTES par. 2

2. RL-10 VARIABLE THRUST PROGRAM: Funds in the amount of \$896,000 have been received to permit Pratt and Whitney Aircraft to resume work on the RL-10 Variable Thrust Cost-Sharing Program. P&WA stopped work on August 6 after expending its share of funds. NASA Headquarters has made use of the funds contingent on a revised scope of work.

→ ^{H-5} I think agreement has been reached between our Engine Mgt. Office and Hq.
(see Weidner NOTES of 10/22, par. 3) B

NOTES 10/22/62 CONSTAN

18
B 10/22

/ SUPPORT FOR MR. SHEPHERD'S OFFICE AT MTF

All of the services and equipment requested by Mr. Shepherd to support his office to be established at Mississippi Test Facility has been provided. Future requirements will be provided within 24 hours after receipt of request. ✓

NOTES 10-15-62 DEBUS

12
B10/22

1. CTL Schedule: CTL Pre-launch preparations are progressing on schedule following the replacement last week of the main distributor. Several minor problems were encountered prior to the initiation of fast fueling test which was satisfactorily conducted on Tuesday. Based on the present schedule, turnover to the NATO troops is planned for next Wednesday, October 17. The Turks are scheduled to handle this particular operation. ✓
2. ARINC Review: A review of the ARINC SA-3 operations at AMR was presented by Mr. Green of the ARINC Corporation to the operational personnel of LVOD and to the LOC Reliability Office. The review primarily consisted of a statement of the contract task and the method which ARINC is utilizing to carry out the terms of the SA-3 contract. ✓
3. Notes to Holmes attached. *Where? B*

B10/22

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considered
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Weidner
NOTES
see
Weidner's
NOTES
par. 2

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between our Engine Mgt. office and Hq.
(see Weidner NOTES B
of 10/22, par. 3)

End of Box 1 as collected by NARA

B10/22

1. CONTROL OF COPPER CONTAMINATION IN SATURN TANKS: Propulsion and Vehicle Engineering Division has prepared a new procedure for checking copper contamination in the tanks being produced at Chance Vought. It is hoped that this will provide the necessary measures to allow a thorough and final satisfactory check to be made at the contractor's plant. There should be no further requirement for additional copper checks to be performed after the tanks are shipped from Chance Vought Corporation. ✓
- * 2. "PROJECT SIXTY": "Project Sixty" is a joint study program of the Department of Defense and NASA to improve the field operations involved in the management of DOD and NASA contracts. Mr. William Harrell of this Division is in Washington, D. C. as the official NASA representative for the Quality Control and Inspection Sub-Task Group. It is understood that MSFC will also furnish the NASA representative for the Contract Administration Sub-Task Group. During a briefing held in Washington during the previous week, the scope of the joint DOD/NASA effort was outlined. Mr. Koppenhaver, Chief, Quality Assurance and Reliability Office, NASA Headquarters, has been advised of the scope of the project. The Quality Control and Inspection Sub-Task Group is composed of the following persons:
- Col. E. E. Ambrose, Director of Quality Control, Air Force Systems Command
 - Leonard Anderson, U. S. Navy, Bureau of Naval Weapons
 - John Patterson, Director, Quality Control, Detroit Ordnance District
 - Glenn Soares, Office of Naval Materiel, Quality Control
 - George O'Titus, Defense Supply Agency
 - William B. Harrell, Quality Assurance Division, MSFC, NASA
- During the briefing, it was explained that individuals on the Sub-Task Groups would devote full time to Project Sixty for approximately the next five months. Considerable travel will be involved, however NASA Headquarters has agreed to fund future travel. ✓
- * 3. TRAINING: Two supervisory Air Force personnel are completing one week of mechanical training as the sixth group from Boeing, Wichita, Kansas on DX A2 Saturn parts and tooling. ✓
- * 4. MSFC VENDOR CODE BOOK: Completed the first computer run of the MSFC Vendor Code Book covering both Name to Code and Code to Name sections. The computer program is a revision of the former code book and was adapted for easier manipulation of parent companies and divisions or changes to the code book. The book is now ready for use on the S-II and Apollo Program as requested by Space and Information Systems Division of North American Aviation or for any other stage contractor who wishes to utilize our Vendor Code Book. ✓

18
B10/22

NOTES - HAEUSSERMANN, 10/22/62

*1. FIRST DELIVERED STABILIZED PLATFORM: The first ST-124 stabilized platform system was received October 1, 1962. It had been operated 18.5 hours in functional testing by the contractor. Functional and evaluation testing in our laboratory has thus far included tests for: air flow, alignment, power consumption, accelerometer performance, accelerometer and prism alignment, dynamic torque, servo amplifier vibration, and resolver chain tests. Also, the Guidance System Processor has been checked out with the system and Phi signal intermediate calibration has been performed. The platform system has now operated a total of 72 hours without malfunction. ✓✓✓

2. ELECTRICAL WORKING GROUP: The Electrical Working Group held three-day meetings in California this week. The 13th C-1 meeting was at the DAC plant in Culver City on October 16. The 4th C-5 meeting was at the NAA plant in Downey on October 17 and 18. Minutes of these meetings will be forthcoming. ✓

3. DAWSONVILLE REACTOR FACILITY: For our radiation testing of electronic components we have to modify an existing vacuum chamber at Dawsonville (about \$20,000) and we also have to start on a larger chamber for flight equipment testing (about \$130,000). Our information is that not MSFC, but AEC will probably take over the facility from the Air Force. Before we invest there we should have a clarification on this.

4. CENTAUR TRANSFER ACTIVITIES: Messrs. Green, Lucero, and Kroh participated in the activities of two Lewis Research Center Evaluation Teams. The Guidance and Control and Tracking Teams visited our Division on October 16 for a full day's session. We gave them a rundown of our Centaur Evaluation and the results. The two teams left for GD/A and JPL without our participation. The Guidance and Control Team, after visiting with M-H next week, plans to return to Lewis Research Center via MSFC (Astrionics Division). ✓

W.H.

→ That's right. Col. Felloos has all the details. Please call him re funding of those modifications. B

This is a great achievement. Congratulations!

B10/22

1. SA-T4.5:

Static firing scheduled, 10/24/62. Four-inch GOX pressurizing line failed during pressure test in preparation for firing. This failure was caused by improper installation of restraining brackets on bellows which allowed too much stress on the bolts. This installation, however, had been in place for about 23 static firings with their accompanying pressure checks. New parts are presently being fabricated by Manufacturing Engineering Division. (See photos attached) ✓

2. S-IV BATTLESHIP TESTING, DAC:

420-second firing planned for 10/23/62. Primary objective is to exercise propellant utilization system in an open loop. ✓

3. GSE TESTING:

R&D tests are continuing on swing arms No. 2 and 3 for use with SA-5. A structural failure occurred on swing arm No. 3 extension, 10/19/62, due to poor weld and weak ratchet support bracket. Propellant connectors modified by LOC have been received for test on swing arm No. 2. No satisfactory connectors for this are have yet been tested. The last two arms of the spare set of launcher arms (retractable and holddown) for VLF-34 were received for test, 10/16/62, from the LOC vendor, Hayes. ✓

*4. MTF:
pm

S-11 test stand configuration was finalized on 10/18/62, and AE contractor initiated design criteria on 10/19/62. Funding authorization for \$150,000 to cover completion of criteria of certain items of S-11 complex has been received and negotiations for necessary contract modification is scheduled this week. Both FY 63 and FY 64 budgets were reviewed and the FY '64 project write-ups for MTF are being reprocessed for resubmission since this office was advised that support buildings cannot be incrementally funded. ✓

In reviewing the reprogrammed FY 63 budget submittal, NASA Washington deleted the E&I Building. It is necessary to have this building in operation prior to activation date of the first test stand. Therefore, a new project is being submitted to NASA Headquarters to obtain 4.5 million dollars in FY 63 funds to construct the E&I Building. The 4.5 million is in addition to the 68.2 million previously submitted. (E&I Building is Electronic and Instrumentation Building.) ✓

To H. Q.'s. ✓ F.E.O. WILL FOWARD DATA

Enc.
2 photos

B10/22

NOTES 10-22-62 HOELZER

No report. H. H.

Hope you are still alive.
How is Sidell? B
Midland?

B10/22

1. CENTAUR:

H.H.
Please see me on this
B

Centaur Office personnel are at Lewis again this week. Lewis has indicated that 13 of the personnel will not be required at Lewis past this week. It is anticipated that further reductions will occur with each passing week. We are expecting a list from Dr. Silverstein during the week, indicating those Centaur Project Office personnel whom Lewis would like to employ.

On Thursday, October 18, GD/A and the Air Force discussed with Lewis an Atlas configuration for Centaur. As a result of this meeting, Lewis is giving GD/A, through the Air Force, a 3 months study contract to define an optimum Atlas configuration for Centaur requirements.

2. AGENA:

Here we go!

a. A-12 - Communication Satellite: Goddard/Langley will launch two Echo test balloons this week from White Sands Missile Range, New Mexico. One is a 100 ft. diameter balloon and the second, a 135 ft. diameter balloon. The purpose of the launches is to determine inflation techniques to attain sufficient skin smoothness of the advanced Echo at various internal pressures. These tests are not expected to change the present launch schedule. ✓

b. Gemini: The over-all Gemini Program has had serious budget cuts. As a result, meetings were held at MSC on October 15, 16, and 17 to review the Target Vehicle Program consistent with these reductions, which involves reduction of approximately 50% for FY 1963. The over-all program is being slipped 5 1/2 months, and all areas of possible reduction are being evaluated. Results of the reduction effort should be complete by November 20, 1962.

Nevertheless, SAM did a good job.
B

c. Ranger 5: The Ranger 5 launched from AMR on October 18, 1962, will have to be termed a failure. Although the Atlas and Agena launch vehicles performed satisfactorily, the spacecraft solar panels did not supply recharging power to the batteries so that the spacecraft could perform its intended functions. The battery power was depleted after about nine hours of flight.

H.H.

→ I hear conflicting reports:
Do they still want Atlas/Agena targets, or is it true that they plan to switch to Mercurys or another Gemini, or Delta??

B

Bw/22

1. SPACE STATION

44K
Meaning?
B

We have heard from a good authority that the space station program is being placed on a "high degree of importance and urgency" basis at the Executive Department level. This is in contrast to Headquarters' thinking. We should consider a reasonable in-house effort on this to stay abreast of the situation and find a good solution to the logistic support of space stations. ✓

* 2. SPACE MAINTENANCE AND REPAIR

jam

We have agreed with MSC to start some zero-g aircraft tests with the USAF (ASD) in our space maintenance and repair program. Probably will start in March or April 1963. Want to ride? Sure! B

3. LONG RANGE PLAN

We have been helping OMSF with their input to the Long Range Plan. This information was due in Mr. Hyatt's office on September 4 (the same time as ours) but OMSF now hopes to have it completed this week. The majority of the effort is being accomplished by Doug Lord's group. The launch vehicle section from Rosen's group is very weak.

In general, the OMSF plan is similar to ours, except that some missions will be delayed in order to keep within the budget ceilings established by Mr. Holmes. I feel it is undesirable to slip future plans, which cannot be completely defined, based on arbitrary funding levels.

* 4. NOVA

jam

Don't understand what you are driving at. B

As a result of our discussion with you and the 2nd Quarterly Review (OMS released the remaining \$1.2M) the GD/A and Martin contracts will be extended into July/August 1963 with March 1st as a target date to select a basic configuration. ✓

B 10/22

- *1. S-II: As a result of the Manufacturing Engineering Working Group Meeting, NAA has officially given up the plan for the explosive sizing operations of the entire bulkheads, thus eliminating the multi-million dollar dies. The new NAA proposals of application of planishing and "heat forming" operations, for correction of contour deviations from nominal dimensions, on completely welded upper and lower shells of the common bulkhead are presently under study. The most questionable operation--besides the explosive sizing of entire bulkheads--is the handfitting of the honeycomb core to the upper bulkhead shell. This is inherent in the present design. Therefore, we are waiting for NAA's evaluation and analysis of P&VE's design proposal which would entirely eliminate the need for this hand-fitting process. ✓
- *2. S-IC: As I reported in my Notes 10-8-62, the manufacturing of gore segments at Wichita is one of the three critical areas where serious delays are showing up. A realistic evaluation of this situation revealed that the first gore segments will be delivered to us 3 to 4 months later than planned. Several factors contributed to this delay: (1) Late design documentation. (2) A difference of opinions on the forming process between Boeing and us. An experimental program at Wichita on a 1/4 scale finally led to the acceptance of our concept by Boeing. (3) An under-estimation of the tool fabrication work for the hydraulic bulge forming of the gore segments. The following actions have been initiated: (1) Boeing is working 3 shifts, 7 days per week, on these fixtures. (2) They have rented additional welding equipment from Linde. (3) Boeing management-up to Mr. Nelson-is aware of this problem and has assigned top priority to the job. The next operations that are affected by the late delivery of gore segments are the trimming and welding operations at ME Division. To shorten the try out time for tooling of these operations we are ordering some additional gore segments from Chicago Bridge Company to be made by incremental press forming. This is a relatively cheap process which will, however, not result in hardware acceptable for flight, but acceptable for tool try out purposes. ✓

B 10/22

1. C-1: SA-3 - Prelaunch checks continue satisfactorily. No problem areas exist at present time. ✓

S-I-5 - in final assembly phase, transfer to M-QUAL is scheduled for 11-5-62. ✓

S-I-5D - transfer to M-TEST is scheduled for 11-7-62. ✓

* S-IV - Battleship - 420 sec. firing, scheduled for 10-18-62, was postponed to 10-23-62 due to diffuser difficulties. ✓

All Systems Vehicle - undergoing tank cleaning in hydrostatic tower, transfer to final assembly expected week of 10-22-62. ✓

2. C-5: S-IC - M-SAT has broken down Boeing cost proposal in accordance with negotiated Technical Work Statement for detail evaluation by MSFC Divisions. Meeting with Divisions is tentatively planned for 10-22-62. ✓

M-SAT is performing time phased analysis to determine total time required for evaluation and negotiation of Boeing cost proposal plus time required for Headquarters review and approval to initiate action to extend present Boeing contract beyond 10-31-62. ✓

* Michoud - lack of C of F funds continue to retard plant activation. Desperately required is advance design money. An "UA" TWX was sent to Mr. Holmes requesting expeditious action. ✓

F-1 Engine peculiar GSE - composite list was prepared of equipment required by MSFC, Michoud and AMR. Equipment will be contracted from Rocketdyne under the follow-on contract. ✓

S-II - Common bulkhead - design aspects will be discussed with NAA/S&ID at MSFC on 10-25-62. ✓

* Explosive Hazard test program - final report is expected to be available approximately 11-10-62. Satisfactory completion of test program will fulfill AF requirements for issuance of a waiver for battleship program at Santa Susana. ✓

S-IVB - Revised Quality Program Revision, developed in cooperation with M-QUAL and DAC Quality personnel was forwarded to WOO for official transmittal to DAC. ✓

DAC transmitted rough-order of magnitude cost estimate for scope change to include telemetry in S-IVB contract. Estimate of \$20.5 Mill includes systems for ground test stages, six flight stages, GSE and component development. DAC was requested to provide detailed cost breakdown and, for comparison, M-ASTR was requested to provide cost experience on similar type equipment. ✓

3. Guidance System - preliminary work to establish C-5 Instrument Unit PERT Network is being performed. ✓

4. Apollo - Joint MSFC/MSR meeting on EDS and crew safety for C-1, previously scheduled for 10-23-62 at MSFC, was postponed to 11-2-62. ✓

Oswald: Still too many items & not enough on each one - JCM 10-22 ✓

B 10/22

NOTES 10-22-62 MAUS

1. NEXT MGMT COUNCIL MEETING-We have proposed an agenda item:
"Proposed Management Changes to Assist the Lunar Program."

Last Friday we received advanced copy of an OMSF revised draft of the "Program Scheduling and Review Handbook." The important feature of the revised procedure: for the first time it endeavors to delineate responsibilities within OMSF and to establish a level at which OMSF plans to control the operation of the Centers.

We have arranged a meeting on Tuesday, Oct 23, 1:30 p.m. between Messrs Risso and Smolensky from OMSF and Rees, Lange and Maus to discuss how OMSF plans to implement.

We also have scheduled a meeting with you Wednesday, Oct 24, 1:30 p.m. to fully brief you on this matter and to decide on an approach for the forthcoming discussion in the Management Council Meeting.

Good

O.K. B

2. LONG RANGE PLAN - At the request of Dr. Shea's office, a representative of CP (Jack Waite) and a representative of FPO (Bill Huber) worked with OMSF on October 16 and 17 in finalizing long range schedules and funding data and in reviewing OMSF input to the NASA Long Range Plan. ✓

The OMSF input follows our MSFC submission closely with the exception of the lunar base build-up for which JPL's concept was used rather than ours. JPL's concept, in addition to the C-5 lunar logistic vehicle, uses C-1B lunar logistics vehicles at a rate of 4 to 6 per year through 1975, in support of the program. JPL justifies the continued use of C-1B LLS's in support of small group explorations at various desirable locations on the lunar surface. O.K. with me B

Further changes made in OMSF's submission against our plan are in the area of

- (a) 5 - 10 and 50 - 100 ton reuseable space vehicles and
- (b) Orbital maintenance and rescue vehicles.

These items, while being discussed in the plan, were not included in the funding due to annual funding ceilings imposed by Mr. Holmes. ✓

B 10/22

1. SA-4 SLOSH BAFFLE AND ANTI-VORTEX DAMAGE: Anti-vortex devices and lower slosh baffles were damaged in each of the SA-4 LOX tanks during static test. Preliminary investigation of static test data and damage shows the damage to result from a geyser caused when we opened the LOX pre-valve after firing. This existed for approximately two minutes after the last firing, whereas previous closure periods were apparently shorter. Calculations for determination of the permissible period will be pursued. ✓

W.M.
Please add sketch explaining phenomenon (next NOTE)
B

2. RIFT: Because of recent FY-63 funding reductions, program adjustments have been made as follows:

- a. First flight date is slipped approximately one year, from 1967 to 1968.
- b. Fabrication of major stage hardware is not scheduled until FY-64 funds are available.
- c. TO-1 tank (battleship tank for NERVA testing) is deleted.
- d. Initiation of construction of Nuclear Rocket Development Station Facilities is delayed until FY-64 C of F funds are available. Design is still planned, however, with FY-63 funds. ✓

3. S-I PROPELLANT DISPERSION MODEL TANK TEST: The first test of a one-quarter scale in diameter, one-tenth scale in length, nine-tank cluster assembly, containing 2500 pounds of LOX and 1150 pounds of RP-1, to determine the dispersion system has been completed. The shaped charge ruptured the tanks so that little debris was formed. Dispersion system appears satisfactory; two more tests will follow. ✓

Where are these tests conducted?
B

4. SA-5: Experimental Structures Section started structural testing of the SA-5 thrust structure on 10-18-62. ✓

5. VEHICLE SYSTEMS INTEGRATION OFFICE--CHARTER: On different occasions you expressed to Office of Manned Space Flight and Marshall Space Flight Center personnel that the Propulsion and Vehicle Engineering Division's Vehicle Systems Integration Office was designated as the sole Marshall Space Flight Center contact and coordination point in the areas of systems performance specifications, design criteria, etc. (Dr. Shea - BELLCOMM) and for design systems integration, documentation, weight and and performance control (Mr. Slean - G.E.). ✓

This direction was incorporated into the "Operating Procedures for Vehicle Systems Integration Office" memo which was previously agreed to by Dr. Rees and you and has been forwarded for signature (draft of 8-10-62).

Due to some difficulties in getting this memo released through concurrence channels, the Divisions and Offices have not received your official direction of the latest, more Center-wide, mission of the Vehicle Systems Integration Office, and some difficulties therefore exist in establishing coordination within Marshall Space Flight Center.

Mac

Please look into this and straighten it out. This paper must go out without B's further delay!

B10/22

Coordination Panels:

History: Reference Notes 10-1-62 Rudolph, Attachment 1
Reference Notes 10-8-62 Rudolph, Attachment 2
Reference Notes 10-15-62 Rudolph, Attachment 3

Status: I talked to Gautraud on 16 Oct; he had discussed with Shea, but not sufficiently, therefore, no conclusion. Told him that you are expecting decision and explained how I see in proposed Space Vehicle Coordination Board (Super Panel) means for clarifying lots of issues presently going on un-coordinated. He then looked (more) favorably at proposal. In ensuing brief discussion invited Gautraud to visit MSFC. He said all right in a couple of weeks and to discuss with you at that time the proposal.

A.R.

I sure do!
B

He and Shea visited MSC re LEM on 17 Oct and I sure hope you endorse my invitation to Gautraud.

From all the talk, I conclude that Gautraud and Shea want your personal approval of the proposal before they move.

Action: Therefore, I initiated the following:

- (1) Requested meeting with Lange and Kuettner on Tues., 23 Oct.
- (2) Request meeting with you, Rees, Lange, Kuettner on Thurs., 25 Oct, AM, in order to brief you on proposed "Super Panel" and get your guidelines. ACTION REQUIRED. ✓

↓
Bowie

Yes, Hope it fits into my schedule. B

Attachments

1. Notes 10-1-62 Rudolph
2. Notes 10-8-62 Rudolph
3. Notes 10-15-62 Rudolph

Copy provided:

Dr. Lange
Dr. Kuettner

*1. OART RESEARCH PROGRAM: Our OART research program has come to a virtual standstill as a result of the budget cuts, and of the continuous reshuffling of tasks between task areas, sub-programs, and programs by research managers at OART.

The crux of the matter is simply this: the charter of OART makes the research managers in OART responsible for establishment, implementation, and execution of the advanced research and technology program of NASA. Managers are to avail themselves of the talent existing at Centers, but they must not get involved in any projects that have some bearing on assigned development projects. The Centers, in turn, are responsible for the execution of assigned development projects. The need for supporting research in connection with these projects is not OART's concern, but OMSF has not assumed the responsibility either to fund this supporting research. Before the present budget cut, and under Mr. Dixon's influence, OART indicated willingness to accept a \$21 M research program from MSFC; when the need for budget reduction arose, OART fell back more and more on its charter, with the effect that most of MSFC's urgent research tasks in areas supporting Saturn and Nova lost their funding support.

I believe that we should not entertain the hope of receiving from OART support for more than strictly non-project-oriented tasks. Even in the non-project-oriented area, we will obtain support only for such tasks in which task area managers happen to be interested. For the bulk of our research program, we need fund allocation either by Mr. Holmes or by Dr. Seamans, but in a way which does not force us to go into a lengthy and uncertain battle with Headquarters task managers for each single task of MSFC's 500-task-program.

The extreme reluctance on the part of Headquarters Program Offices to authorize 1963 funds for MSFC's research programs - in spite of the fact that we submitted all of our program lists and detailed descriptions on time and according to directions (in fact, RPD was frequently praised by OART and by OMSF for this "excellent cooperation") - has generated a growing feeling of dissatisfaction, unrest, and frustration in the divisions and offices of MSFC. In their view, Research Projects Division and, more recently, also Central Planning Office, bear more and more the stigma of "no performance". I believe that this accusation is unjustified. I would like to request your help in solving the problem where it originated: in the present organization of the Headquarters Program Offices. ACTION REQUIRED.

E.S.

We discussed this today at length and I made what I think is a practical suggestion. Please keep me posted how it works out
B 10/22

B10/22

1. F-1 PROGRAM: Negotiations of the F-1 Engine Contract Overrun and Follow-on were completed this week. The overrun figure negotiated was \$17,140,193 based on a slippage of PFRT to 9-1-63. The R&D Follow-on Contract was negotiated for a total cost of \$115,000,000 (thru qualification, February 1966). ✓

Engine 006 was "observer cut" at approximately seven seconds. Subsequent inspection revealed that an "O" ring section had blocked injector fuel passages. Resultant LOX impingement eroded several chamber tubes causing leakage. (The "O" ring was probably damaged during injector installation.) ✓

Engine 010 ran seven seconds without apparent incident. ✓

2. M-1 PROGRAM: Technical direction of the M-1 Engine Project has been transferred to Lewis Research Center as of October 15, 1962. The M-1 Research and Development and Facility Contracts have not been transferred to date.

Not consistent with Gorman's notes

3. RL10 PROGRAM: The throttling contract (NAS8-5605) was presented to Pratt and Whitney Aircraft for signature on 10-19-62. This contract supplement is for \$896,000 and incorporates the scope of work approved by NASA Headquarters Throttling Committee. The remaining \$104,000 is withheld to pay for propellants, which are government furnished. ✓

Mac I think they just

4. H-1 ENGINE: Additional investigation of the Mark 3H turbopump in connection with the recent explosion at Neosho has shown an unsatisfactory tolerance condition affecting the clearance between the LOX pump impeller and the volute. All Neosho-built LOX pumps will have to be opened up for inspection of clearance. This is presently being done; requires approximately one-half day per engine. Engines for SA-7 are the first ones affected. ✓

different words. I think there's

Earlier reported (Beduerftig) potential damage due to fast start in Neosho pump testing has not been verified yet as being a real problem. We have changed their test procedure and are still investigating. ✓

no contradiction B

5. U. S. AIR FORCE CONTACT: Col. Harold W. Robbins is replacing Col. Langdon F. Ayres, who was formerly the prime U. S. Air Force Contact for NASA Headquarters, in the joint NASA/DOD programs arising out of the Webb-McNamara Agreement. Col. Robbins reported that negotiations on the 120-inch TITAN III motor with United Technology Corporation are about complete; tentative plans have been made for working level discussions at Inglewood in about two weeks to review the 120-inch specification and joint technical interests in the 260-inch configuration and its applications in NOVA. Aerospace Corporation, representing U. S. Air Force Technical Interests, is expected to participate. ✓

OCTOBER 29, 1962

MSFC ROUTING SLIP					
	CODE	NAME	INIT.	<input type="checkbox"/> ACTION	<input type="checkbox"/> INFORMATION
1	M-DEP-ADM	Barbara			
2					
3					
4					

REMARKS

Dr. von Braun has read this a couple of weeks ago. Do you want it back? If not, just throw it away, I guess.

CODE M-DIR	NAME Bonnie	DATE 11/14
---------------	----------------	---------------

MSFC - Form 495 (Rev. February 1961)

This is an outline of the statement
Shore a statement involved - Test
would have one okay the deal
in spite of everything that seems.
LOC got their r r into the pits for free
if we are unable to do likewise I want to know why.

1. MTF: The MTF Railroad came to a stop in Mr. Gorman's office 3 weeks ago - can you blow the whistle to either make it go or kill it? If all decisions take this long, MTF will never get built (see dates and events on Attachment 1).

Harry
Note
gun

note: we will have a r r on time

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Dates & events on MTF Slow-moving Choo-Choo Train

200
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2. Met with Southern Railroad May 25, 1962
3. Made field trip to MTF June 5, 1962
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(LOTS OF MEETINGS WITH RR'S & DEEP THINKING BY P&C)
8. Presented to Mr. Newby for approval October 5, 1962
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10. Requirement presented to Capt. Fortune October 6, 1962
11. Joint meeting with Mr. Gorman October 24, 1962
12. Further requirement given to Mr. Eubanks, M-P&C October 24, 1962
13. P&C contacted L&N on contract agreements at "Cape",
L&N checking and will contact P&C this week. October 26, 1962

Boyle
10-29

1. WASHINGTON TRIP: I talked to Brackett Friday morning and to Holmes Friday afternoon on a new date for definitizing the Boeing contract. I spent about two hours with Brackett and an hour and fifteen minutes with Holmes (Rosen was out of town). Both gave their concurrence on a new date for submission to Headquarters, which is now scheduled for December 3, 1962. Although I received the concurrences under cordial circumstances, I have no desire to ask for additional time. I also spent an hour Friday afternoon with Bob Charles, consultant to Mr. Webb. It is pretty clear that Charles has been retained to push the incentive contractual arrangements within NASA. I also talked to Jack Young about the NASA Headquarters plans in case of an emergency. There is an emergency plan in existence which moves NASA's top management to a relocation center. I brought a copy of this plan back with me. Newby has it for his use in setting up our own plans here at Marshall. ✓

2. SHUTTLE AIR SERVICE FROM MSFC TO LOC: Patrick Air Force Base is now on Alert Condition Three, which authorizes official planes only. If Condition Two occurs, PAFB will be closed. Our contract planes will use Cocoa-Titusville as an alternate for Visual Flight Regulations conditions, and Orlando Municipal Airport for Instrument Flight Regulations conditions. ✓

3. M-1: Transfer of the M-1 contract is being expedited. ✓

4. J-2 R&D CONTRACT: Rocketdyne Division of North American has indicated a \$35 million overrun is anticipated on the J-2 engine R&D contract. Our P&C office and engine management personnel are working together on this. ✓

5. RL-10 VARIABLE THRUST: Final action has been taken to revise the scope of work and fully fund the government's portion of the cost-sharing contract with Pratt and Whitney. Performance is scheduled into July 1963. ✓

6. BOEING CONTRACT: Final negotiations are underway on a 60 day extension beginning November 1. The total cost proposed by Boeing for the 60 day extension is \$11 million. ✓

7. URGENT ACTION: An urgent action message was sent to NASA Headquarters, October 24, 1962, requesting authority to proceed immediately with an accelerated construction schedule on the Hydrostatic Test Facility. You will recall this was discussed during the Quarterly Review. The estimated cost of the acceleration is \$197,000. The response to our request was received in Holmes office while I was there Friday. He was not satisfied with the answer and sent it back for a "re-do". We should hear today. ✓

H.G.

Please fill me in B did 11-5-62

8. BROWN AND ROOT: Following the visit of Brown and Root here last week, Congressman Thomas called Brainerd Holmes and complained at some length about what he termed this Center's attitude towards contracting for support services at MTF. Apparently, Brown reported that we were in favor of a number of smaller contractors to provide support services. Apparently, Thomas also called Seamans on the same subject. I told Holmes that we had no firm position on how the support work should be contracted, but that we would have a procurement plan into Washington within the next six to eight months, and any discussions with Congressman Thomas or anyone else on this subject would be premature. However, you may hear from Washington on this.

fin

B 10/29

R 10-29-62

* 1. PLANT MODIFICATION PROJECTS AT MICHLOUD

MSFC, Boeing, Chrysler and Mason-Rust have executed 59 contracts or sub-contracts to various firms for plant modification type projects at Michoud. Fifty-seven of the fifty-nine contracts or sub-contracts, totaling about \$6,514,577, were awarded to New Orleans firms. The other two subcontracts, totaling \$818,688 were awarded to companies outside the New Orleans area. These contracts included equipment costs (cranes, junior wall partitions, etc.) as well as installation costs. ✓

2. VISIT OF COL. R. P. YOUNG

Col. R. P. Young, Executive Assistant NASA Headquarters, visited Michoud Operations on 10/25/62. His prime interests were: (1) Michoud Mission; (2) A-E Selection; (3) Construction Projects; (4) Procurement Policies. Col. Young was given a briefing covering the above listed items. He was also escorted on a tour of the plant. ✓

3. LANDSCAPING OF COMPUTER FACILITY

The FAA had a contract for landscaping the grounds of the computer facility prior to transfer of the facility to NASA. The FAA has agreed to execute the contract and the contractor began the landscaping last week. ✓

NOTES 10/29/62 GEISSLER

B_{10/29}
10-29-62

1. Base Heating 15 Minute Film: Re: your suggestion on Notes 10/15/62 Geissler (copy attached). We are making arrangements with PIO (Mr. Wilson from M-AERO and Mr. Wooton from M-PIO) to prepare such a film to be available for your review by February 1, 1963. ✓

2. Centaur Base Heating Tests: Re: your suggestion concerning Centaur base heating tests in Notes 10/22/62 Geissler, (copy attached), the Centaur Base Heating Tests will be continued at Cornell under MSFC management and results will be given to Lewis Research Center. This will be the most expedient course, since if it were transferred now, a new contract would be required with resultant delay. Tests are scheduled for 1st half of December. Lewis representatives will be active in the tests. Lewis will let a contract to cover the effects of the Convair proposed skirt extension. The contract paper work had been initiated here before the Centaur transfer to Lewis, but had not been processed in time to include in the transfer. ✓

3. Centaur Transfer Progress: A total of six Aero. Div. personnel participated in two of five working groups established by LeRC to facilitate the transfer of the Centaur vehicle. Meetings were held for the period of Oct. 15 to Oct. 24, 1962, at GD/A, JPL, LeRC, and MSFC. There appeared to be a lack of coordination and the LeRC personnel appeared to be poorly informed in the Structures and Dynamics Working Group. In one instance a meeting was held without LeRC participation. Three Aero. Div. personnel will return to LeRC October 28, 1962. ✓

4. Duplication of Effort: Concerning your comments on Notes 9/24/62 (COPY ATTACHED) Geissler, this subject, Mr. Mrazek told me that Dr. Krause does not want a transfer, and he also told me that he feels that the work ~~that the work~~ by Mr. Burns on calculations of variation type performance should be used for preliminary trajectory analysis since it is available! ✓

5. Development of Division Support Contractors: In response to Mr. Gorman's suggestion of developing special Division support contractors, I have had discussions with both Lockheed and Northrop representatives. The discussion with Lockheed people clearly indicated that they liked research type work but were quite wary of assignments which might have repercussions on their eligibility for hardware bids. I encouraged their Research Institute by indicating that supporting research assignments in the areas of advanced control and guidance analysis were likely to be considered. The negotiations with Northrop (Dr. Howard, Vice President of their Space Laboratories) were handicapped by the same concern - which is of course equally critical for us as for contractor - but we have tentatively agreed that we may get up to 15 well qualified people in the area of celestial mechanics and structural dynamics who will work partially in direct support and partially on supporting research type assignments. We are expecting visits by some of their key tech. people. If Northrop is awarded the LEM contract this may seriously interfere with discussed plan. Basically it will always be advisable to retain local contractor (flesh peddling) support which is free from any strings attached. ✓

→ EG

let's discuss this subject

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B422 R
10-29-62

- * 1. QUALITY ASSURANCE COVERAGE ON S-IV AT DAC: According to information received from Mr. Koppenhaver of the Office of Reliability and Quality Assurance in NASA Headquarters DOD has indicated that spaces to support NASA and this Center's contract will not be available in FY 1963. As a result, a move is underway to supplement the Air Force inspection capability on the S-IV program with the NASA-O/Downey inspection personnel. The necessary agreement has been reached between myself, WOO-Mr. Kamm, Western Contracts Management Region, Col. Dunn and the AFPR at Douglas-Mr. Jackson. The NASA-O personnel will be loaned to the S-IV program until either the Air Force builds up the necessary capability and/or until the NASA-O personnel are needed on the S-II program. Detailed arrangements, handled by the Senior Representative of this division at Douglas in cooperation with the Resident Project Manager SIV at Douglas, are underway for phasing such personnel into the S-IV facility. It is expected that approximately 8 people will be made available this way by November 1, 1962, and approximately 12 more before January 1, 1963. ✓
- * 2. QUALITY ASSURANCE AT SEAL BEACH (S-II) AND HUNTINGTON BEACH (S-IVB): To further enhance the NASA operation, some thought is being given to utilizing the NASA-O organization capability at both Seal Beach for S-II and at Huntington Beach for the S-IVB where assembly, test and checkout of both stages will be accomplished respectively. I have been in contact with WOO-Mr. Kamm on this subject, who will take it up in NASA Headquarters. ✓
3. SYSTEMS CHECKOUT AND PREFLIGHT TESTING WORKING GROUP: The Working Group met with NAA and DAC on S-II, S-IV, and S-IVB during the week of October 1. Relationships with NAA for MSFC review of test procedures are being established and appear to be going well. DAC gives the appearance of cooperation on the S-IV test procedure review but are basically reluctant to have MSFC review their procedures. ✓
- Scheduling of the S-II Facilities Vehicle for AMR creates a problem for MTF stand checkout. Stand checkout with a vehicle will be using 502 and 503 as of now and we disagree with the practice of using flight vehicles for this purpose. ✓
4. SA-4 FINAL CHECKOUT: The S-I Stage was received for post-static pressure functional testing on Oct. 22, 1962, and is located in the Bldg. 4708 checkout cell. ✓
5. NOVA: Mr. Les Dasso, representing General Dynamics Quality Assurance for the Nova Study, was present in the Division October 16 through 19. Mr. Dasso is responsible for developing a Quality Program in support of the Nova Study Contract held by GD/A. Orientation sessions were held in the various areas of Division responsibility and activities. ✓

NOTES - HAEUSSERMANN, 10/29/62

B 10/29
10-29-62

1. GAS BEARING TEST PROGRAM: Preparation of fixtures, test components, and test outlines is 90% complete for the program which is to be conducted at Wyle Laboratories in El Segundo, California, during the month of 11/62. The purpose of the program is to investigate the dynamic characteristics of various gas bearings under the combined environments of acceleration and vibration. These tests will be conducted at standard component exhaust pressures and reduced exhaust pressures and at varied operating pressures. ✓

*2. ELECTRON BEAM WELDER: The welder was recently installed by a factory service representative. Since installation, the machine has been used to make samples and allow the operators to gain operating experience. Continuous investigations are being made on different materials such as magnesium, aluminum, silicon iron, and stainless steel to establish experience data. Also tests are planned for welding electrical connections in wiring and packaging. A job of spot welding stator laminations for the Gyro Branch is now underway. ✓

B10/29 10-24-62

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Harry
Note
9cm
B!

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1 Attachment:

Dates & events on MTF Slow-moving Choo-Choo Train

Mac
Let's
take this
up with
MSC people
on 11/1
11/17
HSV
B

17
B
10-29-62

DATES AND EVENTS ON MTF SLOW MOVING CHOO-CHOO TRAIN

- | | |
|---|------------------|
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| 13. P&C contacted L&N on contract agreements at "Cape".
L&M checking and will contact P&C this week. | October 26, 1962 |

Dave Newby

for info.

B W/1

B
10-29-62

B 10/29

1. CENTRAL COMPUTER FACILITY SLIDELL: The decision has been made
* to proceed immediately with choosing a contractor to operate the
gcm Central Computer Facility at Slidell. An initial Scope of Work
has been drawn up and given to Davis (P&C). It is planned that an
RFQ will be issued within the next few days and a contractor
selection be made early in December. The schedule further plans
that the chosen contractor will be on board and operational in
Slidell by January 1, 1963. ✓
2. TM BRANCH DE-CENTRALIZED COMPUTER: The ADPS Working Group met
on the installation of a 1401 system in TM Branch and decided it
would be deferred. All TM Branch jobs will be processed on the
central computer. It was felt that a de-centralized computer
system is premature at this time. ✓
3. HEADQUARTERS ADP MEETING: The ADPS Office participated in the
GE Apollo and NASA Headquarters personnel meetings. As a result
of these meetings Mr. Dannenberg will present MSFC concept of
DATA CENTER to the Management Council tomorrow. ✓
4. FLIGHT SIMULATION FACILITY: Modification of Building 4663 for
the Extended Flight Simulation Laboratory has been completed.
Astrionics Division is negotiating a contract for the equipment
needed in Phase II of this project. Work is continuing with
Astrionics Division on another joint project: Piloted Docking
Simulation. Target date for first runs is January 1, 1963. Support
of the above two projects plus current and projected work load on
C-1 and C-5 will require operation of two shifts during the next
six months. A second (231-R) computer is urgently needed and
procurement should be initiated immediately. ✓

?? gcm

B B/H/29
10-29-62

1. CENTAUR:

Eighteen MSFC Centaur Office personnel are charged to Lewis this week. Of these eighteen, fifteen are at Lewis and the others are at various other locations. Lewis has indicated interest in hiring seven MSFC Centaur Project personnel. Four of these have had initial interviews and the remaining three will be interviewed as soon as possible. Lewis has given MSFC the names of six additional personnel for release by Monday, Nov. 5. ✓

Mr. Nettles, Centaur Project Manager for Lewis, departed for GD/A on Monday, Oct. 22. The purpose of his visit was to fix the specification for the Centaur/Atlas, formerly called the standardized Atlas. ✓

2. AGENA:

a. Gemini: The budget for the Gemini target vehicle (Atlas/Agena) has been drastically cut. This was discussed at Houston on Oct. 15, 16, 17, and MSFC received official notice by TWX on Oct. 23, 1962. The full impact has not been completely evaluated to date. Guidelines are, as an objective, to reduce the Atlas/Agena from 103 million to 81 million. The limitation on the FY 63 authority appears to be the most acute area. MSFC feels that the budget cut will result in a necessary curtailment of the present program schedule consistent with limited funding; reduction or elimination of certain design effort, which will result in a less versatile target vehicle; and, short cut or deletion of many of the planned reliability demonstration tests. Even then it is not certain that the program can be accomplished within the funds allowable. A new program plan and schedule is planned to be completed Nov. 19, 1962. MSFC, MSC, Air Force Space Systems Division, and Lockheed Missiles and Space Company are beginning a series of conferences to determine the most optimum reprogramming action to take. ✓

b. Ranger: Word has been received from NASA Hq rescheduling the launch dates for Ranger 6, 7 and 8 one month later than previously planned. This delay was initiated by JPL to allow sufficient time to incorporate highly desirable engineering changes into some of the scientific instruments on board the Ranger spacecraft. The rescheduled dates are as follows:

Classification Changed		Old	New
To:	UNCLASSIFIED	Jan 63	Feb 63
By Authority of	Ranger 6	Mar 63	Apr 63
Date	Ranger 7	May 63	Jun 63
	Ranger 8	Sep 63	Sep 63

This office has notified AFSSD and LMSC of the new dates and requested notification of impact, if any, at the earliest possible date.

Also, program go-ahead has been received from Headquarters for five additional Ranger missions. The launch dates for these missions (Ranger 10 through 14) will be in CY 64. ✓

~~CONFIDENTIAL~~

R
10-29-62
Boyer

1. NOVA

Frank Williams and several Division representatives are visiting Martin and GD/A this week to review in detail the progress on the NOVA studies. With your approval, we are reorienting the effort towards more advanced NOVA concepts and we have postponed the date for a selection of a particular configuration at least until March 1, 1963. We are also continuing our study contract with Boeing on the solid boosted NOVA in the amount of \$200,000. The main problem of the solid version seems to be "length." If we use a cluster of four 260-inch solid rockets in the first stage and want a million-pound payload capability, we get a 700-foot long vehicle and a free-free, first bending frequency of 1 cps. We probably will have to increase the diameter of the vehicle and possibly the engines. ✓

2. ADVANCED LUNAR TRANSPORTATION SYSTEMS

We are back from our mid-term reviews (at Lockheed and Chance-Vought) concerning Advanced Lunar Transportation Systems. The present results do confirm that we would like to incorporate the RIFT stage into our lunar logistics system as soon as practical. For later, the reusable ferry and shuttle system still looks very promising. This, however, will require a new reactor and, therefore, will not be available before 1973. Until then, we will have to live with expendable transportation systems. The final presentations will be early in December or possibly January. ✓

Let's discuss this occasionally. B

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B 10/29

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10-29-62

1. C-I Program: The S-I Stage for vehicle SA-4 was transferred to Quality Assurance Division on October 22, as scheduled. ✓

The first assembled 154" Instrument Unit has been delivered to Astrionics Division for tests. ✓

*
gm 2. S-II Common Bulkhead Problems: The new methods for sizing the upper and lower shells of the common bulkhead, as proposed by S&ID after giving up explosive sizing, have been studied by the Manufacturing Engineering Working Group. The basic idea is to use a "heat forming" process for sizing which consists of complete annealing, heat treatment, quenching and aging cycle of the complete bulkheads of 33 feet diameter while restrained on a 33 feet diameter ceramic die with embedded heating elements and cooling pipes. The ceramic material, called glass rock, is a remarkable material which can withstand high thermal shock loads and has for practical purposes a zero thermal expansion factor. It is being used for, the brazing and heat treatment cycles for fabrication of stainless steel honeycomb panels. This proposal certainly has merit--but also many unknown factors. The answers of S&ID to our many questions about timing of the quenching cycle--the complete bulkhead must be quenched from 970° F to room temperature within 10 seconds--tolerances of the die, uniformness of material properties, etc., were: "We have experience with this process and we are confident that we will solve these problems". The confidence is there, but the answer is generalized! Because of uncertainty of success with this method S&ID has been directed through Saturn Systems Office not to proceed with construction of 33 feet diameter dies of this type for the complete bulkhead, but to go ahead with application of this method for sizing of gore segments. The problem of sizing a complete bulkhead of 33 feet diameter to tolerances of $\pm .020$ " all over the contour is still unsolved--at least no method with a reasonable confidence factor for success is known at this time. Therefore, we strongly recommend consideration and evaluation of the membrane-type bulkhead design or to bond upper gore segments in place and seal of gaps by the use of doublers.

W.K.
Request
a
briefing
on this
subject
by the
most knowledgeable people
we have. Please arrange

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Notes 10-29-62 Lange

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1. C-1: S-IV - Hydrostatic Dynamics Vehicle is in route to MSFC.
* Battleship - Pratt & Whitney developed a new measuring system for the lox pump seal. On 10-26-62, 2 1/2 hours before the firing at SACTO, P&W made a firm recommendation to put this instrumentation in the six A-1 engines. M-SAT agreed to shut down for this change, since engine S/N 1810 at P&W indicated serious trouble. Now it is estimated that the firing will be on 10-29 or 30-62. ✓

2. C-5: S-IC - Long term contract. The reviewed and compiled comments of MSFC's divisions on Boeing's cost proposal will be transmitted to P&C on 11-5-62 in preparation for negotiations on the proposal. - On 10-23-62 M-SAT initiated procurement request for a 60 day extension of present contract. Extension will be implemented by 11-1-62 in order to provide sufficient time to finalize negotiations and to forward contract to HQ's for approval.

* Michoud - On 10-25-62 word was received from OMSF that \$60,000 of advance A/E money was approved by Dr. Seamans. TWX was sent to M-FE to proceed with funds release to Boeing. ✓

S-II - The various configurations of the common bulkhead were discussed by MSFC and NAA on 10-25-62. As result NAA was directed to pursue the MSFC design as the prime configuration with the NAA design as an alternate. ✓

* 3. Guidance System: The C-5 Instrument Unit Project Review scheduled for 11-6-62 has been cancelled. Instead, an Instrument Unit C-1, C-IB and C-5 Review is scheduled for 12-10-62 at MSFC. This review will present the development status of the Instrument Units and their components, scheduling, management of the Instrument Unit development and problem areas. ✓

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O.L.
But, please, no further delays & postponements!
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NOTES 10-29-62 MAUS

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1. FY-64 BUDGET ESTIMATES-OMSF - MSFC submission for the OMSF FY-64 Budget Estimates has been completed. Data developed are based on OMSF control ceilings for approved programs of \$739,657 Millions RD&O (Direct) for FY-63, \$1,161,700 Millions RD&O (Direct) for FY-64, and the OMSF schedules as approved by Director, OMSF on October 15, 1962. These are the schedules which were discussed at the 2nd Quarterly Review on October 16, 1962, at MSFC. ✓

The OMSF guidelines received with the FY-64 dollar ceilings deleted the M-1 program entirely and reduced the NOVA program from \$75.0 Million to \$15.0 Million. ✓

The reduction to the NOVA program funds as indicated will probably necessitate the redefinition of the project. ✓

"supp. research, NOVA related"

A summary breakdown of the FY-64 funds as submitted to OMSF on October 26, 1962:

<u>Items</u>	<u>Millions</u>
C-1 Program	195.500*
C-1B Program	121.800*
C-5 Program	662.600
NOVA Program	15.000
Engine Development	139.800
Launch Vehicle Technology	27.000
Total	\$1,161.700

*Includes Apollo Vehicle procurement.

2. NEW NASA SYSTEM FOR ISSUING DIRECTIVES - We have been contacted and informed that Mr. Valentine of Management Analysis Division, NASA, and Mr. ^{Harris} ~~Hart~~ of the General Services Administration will visit MSFC on October 30-31, 1962. The purpose of the visit is to review Marshall's system for issuing management and technical directives. NASA is in the process of developing a new agency-wide system of issuing directives. Their visit will be handled by our Management Services Office. ✓

3. PROJECT SIXTY - In connection with Project Sixty, the joint study program of Dept. of Defense and NASA to improve field management of DOD and NASA contracts, the NASA Director of Procurement and Supply has requested info on personnel in field centers in support of procurement by functional area: i.e. contract negotiation, cost analysis, contract administration, reliability, quality assurance, and engineering. Project Management personnel are excluded. The study is not just limited to our Procurement and Contracting activity by M-P&C, but includes other areas as well. M-CP is compiling the data required. ✓

1. SA-4 SLOSH BAFFLE AND ANTI-VORTEX DAMAGE: Reference NOTES 10-22-62 MRAZEK, paragraph 1 (See Attachments #1 and #2). ✓

2. S-I PROPELLANT DISPERSION MODEL TANK TEST: Reference NOTES 10-22-62 MRAZEK, paragraph 3 (See Attachment #1) Testing is performed in the Army Demolition Area No. 1, Redstone Arsenal, 8400 Building area. ✓

*3. AUXILIARY PROPULSION MEETING: Representatives from Douglas, Lockheed, Manned Spacecraft Center, Marshall, and NASA Headquarters met in Huntsville on 10-24-62 to discuss the possibility of utilizing the APOLLO or GEMINI thrust units for the S-IVB and RIFT auxiliary propulsion systems.

The thrust units that came closest to meeting the S-IVB and RIFT requirements were the APOLLO/GEMINI 100-pound thrust, ablative-cooled thrust units; the APOLLO 100-pound thrust radiation-cooled thrust units; and the APOLLO subscale ablative-cooled thrust unit of 2200 pounds thrust. W.M.

The conclusions reached included:

a. The APOLLO/GEMINI thrust units were not suitable for application to the S-IVB auxiliary propulsion system. Why not? B

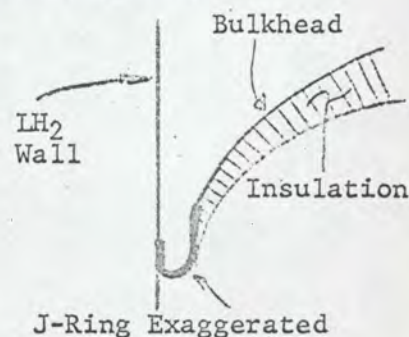
b. Based on present analysis, the APOLLO/GEMINI thrust units are not suitable for application to the RIFT auxiliary propulsion system. (Lockheed is presently in the preliminary analysis stage and must conduct further analysis before a definite conclusion can be reached for the RIFT stage.)

c. The propellant to be used in the S-IVB auxiliary propulsion system will be changed from Nitrogen Tetroxide/50-50 UDMH-Hydrazine to Nitrogen Tetroxide/Monomethylhydrazine.

d. Douglas Aircraft Company should be allowed to proceed with their plans for letting a contract for the S-IVB auxiliary propulsion system thrust units. Will cost a lot of money!! I had hoped we could avoid that!

4. STANDARDIZATION: The standardization effort that has been achieved by Engineering Procedures Section of Propulsion & Vehicle Engineering Division, particularly the Marshall Space Flight Center Engineering Manual, was acknowledged in a meeting of the NASA Steering Committee at Daytona Beach, Florida on 10-18/19-62. This committee is seriously considering adoption of this manual as the NASA Drafting Manual and immediate reorientation of it to include the peculiarities of the various NASA Centers. ✓

*5. S-II: Space and Information Systems Division, North American Aviation, presented to the Vehicle Mechanical Design Integration Working Group results of their studies on the S-II common bulkhead. Changes since the last presentation were to use the "glass-rock" sizing die (a refractory metal die which has virtually a zero coefficient of expansion) interior LOX tank insulation in the area where the tank is not insulated against the LH₂, and use of the "J" ring to close out the membrane seal to the LH₂ tank walls. Marshall Space Flight Center directed S&ID to continue with the same urgency development of a membrane seal for the common bulkhead and studies for sizing the completed upper facing sheet of the common bulkhead. No tooling will be released for fabrication until an agreement is reached concerning a workable common bulkhead. ✓



Attachment #1: NOTES 10-22-62 MRAZEK

Attachment #2: SA-4 SLOSH Baffle and Anti-Vortex Damage

NOTES 10-29-62 Rudolph

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Ranger Review Board:

As you know from Oran Nicks' teletype of Oct 24, 1962, I am invited to serve on a Board to review the Ranger Spacecraft. The assignment is for the period Oct 30 through Nov 30 and covers a very tight day to day schedule.

I feel that Friedrich Duerr's contribution through me will be very valuable to the review. Dr. Werner from my office will be in touch with him and other MSFC people as necessary.

Mr. Howard Burns will be in charge of my office during my absence. ✓

B 10/29

1. LUNAR LOGISTIC PAYLOAD STUDIES: Last week Northrop Space Laboratories and Grumman Aircraft made presentations regarding the status of our work under the Lunar Logistics Systems Payload Study contracts let by Dr. Shea's office. George Bucher attended both presentations and I attended the one by Northrop. They have reached the mid-points of their three-months study, and the results were very interesting. George is maintaining close liaison between these studies, MSFC's in-house studies, and the people in Dr. Shea's office. RPD has responsibility for coordination of the in-house study on the Roving Locomotion Analysis. Jim Downey is coordinator; John Bensko and co-workers are responsible for lunar surface models; Georg von Tiesenhausen (LOC) and co-workers are responsible for vehicle design aspects. The results to date have been substantial. This week, Dr. Eugene Shoemaker, U. S. Geological Survey, will visit us to discuss lunar surface models. ✓✓

2. PROJECT HIGH WATER: Final preparations are being made to observe the water release experiment on SA-3. The experiment will be monitored by optical instrumentation located on the mainland, Grand Bahama Island, Great Abaco Island, and on a range ship positioned under the release point. Electronic instrumentation will be located primarily on the mainland. ✓

3. RADIATION SHIELDING STUDIES: Although nothing definite can be stated at the present time, we are optimistic about the MSFC role in the field of charged particle shielding. We are planning to ask for a budget of \$1.1 M for FY-64, which will encompass the total NASA program in this area. ✓

X 4. OART RESEARCH PROGRAM: The situation with OART has been cleared up by the following events: (1) additional guidelines from OART (2) Mr. Miles' visit to Dr. Bisplinghoff's office and (3) funds made available by Mr. Hardeman and Saturn Systems Office to cover contract actions in process which were cut out by OART's latest fund cut. As already discussed last Friday by Gerhard Heller, the total that can be expected from OART for FY-63 is unchanged and amounts to 9.1 M. A memorandum has been circulated to the MSFC divisions, describing in detail the OART program in the areas of Space Vehicle Systems, Space Power Electronic Systems, and Research. ✓

On his visit to Dr. Bisplinghoff, Mr. Miles asked him to "sign-off" on the MSFC technology requirements lists I and II (intended to fill in the "dry lake"). In principle, Dr. Bisplinghoff agreed that OMSF and MSFC should proceed with them, but he said that the assignment of his office is to review all NASA research and technology programs, so he must do this first - in detail. Detailed information was left with him for this purpose. He also wanted some assurance that OMSF would approve MSFC's plan to reprogram into this area before spending manpower for the review by his people. His office initiated action to obtain an indication to this effect from OMSF. ✓

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*1. LH₂ PLANTS: It was learned on 10-25-62 that the Torrance, California and West Palm Beach, Florida liquid hydrogen plants had ceased operation. The Fontana plant has been down for several days and is not expected to be back in operation until 10-30-62. This means that presently no suppliers of liquid hydrogen used by NASA are in operation. The extent of "down-time" on the Torrance and West Palm Beach Plants is not known at this time. ✓

2. F-1 PROGRAM: Engine 006 was successfully run for 39 seconds at 1,545,000 pounds thrust on 10-20-62. The test was terminated prematurely (scheduled for 150 seconds) by a chart observer when the facility fuel tank pressure was seen to rise above the redline value. The pressure rise was due to the failure of the fuel tank burst diaphragm. This same engine was run at 1,605,000 pounds thrust on 10-23-62 for 70 seconds of a scheduled 150-second run. This test was terminated prematurely by an observer when a flame was caused by a hot gas leak in the area of the gas generator. ✓

*3. J-2 PROGRAM: Due to LH₂ shortage, testing has just about stopped. Rocketdyne reported in a J-2 Engine Program Review Meeting last week that the LOX shortage is also hurting the J-2 Program. They pointed out that if additional LOX storage facilities are not provided soon that it could have a detrimental effect on the program. NASA has been working on this problem since 4-62. ✓

4. RL10 PROGRAM: As a result of additional funds being marked for the throttling program in FY-63, Pratt and Whitney Aircraft will present their plan for an expanded throttling program for FY-63 to Marshall Space Flight Center in 10-62.

Vibration testing of an RL10A-3 engine to the levels established in the model specification (SA-5 level) has resulted in failure of several engine components. Pratt and Whitney has been requested to look at corrective retrofit actions on a first priority basis. Test data to date is being reviewed by Marshall Space Flight Center personnel. Testing at Pratt and Whitney will be continued and witnessed by Marshall Space Flight Center personnel. ✓

5. H-1 ENGINE: Three Mark III-H turbopumps for the SATURN Test Booster have been partially disassembled to check out the LOX impeller to LOX volute clearances. All three pumps were in specification. The turbopumps on the SA-7 flight vehicle are presently being disassembled for the same tolerance check. The recent LOX pump explosion at Neosho has triggered this present investigation. Although the cause of this explosion has not been determined, it was decided that all flight vehicle turbopumps be re-examined. This is in accordance with our play-it-safe policy at Marshall Space Flight Center. ✓